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INFANTRY TRAINING.

Vol. II.

WAR.

1921.

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**INFANTRY TRAINING, VOL. II, 1921
(Provisional).**

ERRATUM.

Page 7. Title of Chapter I. For "INFANTRY IN TRAINING,"
substitute "INFANTRY IN BATTLE."

INFANTRY TRAINING.

INFANTRY IN TRAINING.

1. *General considerations.*

1. No fixed and unvarying rules can be laid down for the handling of troops in war. The conditions of battle vary in every case, according to the climate and time of year, the strength, armament, physical condition and fighting spirit of the opposing forces, and the objects which they wish to achieve. There are nevertheless certain guiding principles, as set forth in Field Service Regulations Vol. II, which experience has proved to be essential to victory.

The aim of our system of training must be to teach the officers and N.C.Os. who will lead the infantry in battle how to apply these principles, and so to imbue each leader with them that in the heat of action he will instinctively apply them in the right way.

2. All fighting, whether between individual men or armies, divides itself into two distinct actions, viz., attack and defence. Infantry must be prepared to combine attack

and defence, or to change from one to the other without confusion or hesitation. The attacker must be ready to defend himself against sudden counter-attack from the enemy, while the defender, after parrying the enemy's blow, must be ready to throw him back by a counter-thrust, or, profiting by any weakening of the attack, to pass in his turn to a general counter-offensive.

It will often be necessary, whilst delivering a decisive blow at one part of the field, to hold off the enemy in other parts by fighting a delaying action.

3. The object of this manual is to demonstrate these principles and their normal application to the present conditions of warfare.

2. Position and duties of infantry commanders in action.

1. During the fight, the commander of a brigade or battalion influences the course of the action by means of his original orders and subsequently by the employment of his reserves.

2. The position of brigade commanders will be decided in accordance with the principles contained in Field Service Regulations, Vol. II, Sec. 107. They must keep in close personal touch with the artillery commander detailed to support them.

3. The battalion commander, if he is to make the best use of his supports and reserves, must keep his finger on the pulse of the fight, and remain in the closest possible touch with the two means by which he can influence the action once it has begun.

Thus in the attack he should normally advance with the supports, until the moment when they have been committed to a definite rôle, whilst subsequently he should move with the reserve. In defence he should post himself at the spot where

he can best supervise his command, watch the enemy, and receive and transmit orders. The site of his headquarters should therefore normally be near the battalion reserve. He should keep in close personal touch with the artillery commander detailed to support him.

4. In view of the importance of decentralization of command, it is essential that superior officers should never trespass on the proper sphere of action of their subordinates. Personal example has undoubtedly an extraordinary influence especially under heavy fire, and there are times when every other consideration must be sacrificed to leading or steadying the troops. But any attempt to exercise personal control over all portions of the force must inevitably lead to the neglect of other duties, such as seizing opportunities created by the leading companies and making use of the supports and reserve at the right place and time, protecting the flanks, meeting counter-attacks, reporting to or communicating with the superior commander and maintaining connection with the artillery and adjoining units. •

5. Company and platoon commanders will choose their position so that they can best supervise their command, obtain a good view of the enemy, receive and transmit orders, and use their supports at the decisive moment. In both attack and defence, therefore, their position will normally be with their supports.

6. The section commander will choose his position so that he can best control the movements and fire of his section.

7. Throughout an action all commanders should try to anticipate the various situations which may occur, and should decide what steps they would take to meet them. They will thus be better able, when the necessity arises, to issue orders promptly and with decision.

3. *Inter-communication and passing of orders.*

1. All commanders are responsible for keeping their respective superiors, as well as neighbouring and subordinate commanders, regularly informed of the progress of events and of important changes in the situation as they occur.

All ranks should notice what takes place within their view and hearing, and report anything of importance accurately and at once to their immediate superior, who will pass it on to the higher commanders and to neighbouring units.

This is the foundation of co-operation in war and is essential not only in battle, but at every stage of a campaign.

2. The senior in any body of troops is responsible for forwarding messages to their destination.

3. During an action every company commander will leave with the battalion commander two runners of his company who can be trusted to carry a verbal message or order correctly and to describe intelligently the local situation. These men will be used to convey urgent orders to the companies in action when other means of communication are not possible.

Similarly a battalion commander will send representatives of his battalion to brigade headquarters.

4. Within the battalion, orders and messages in battle will be written when possible. Verbal orders by a commander on the battlefield should conform generally to the accepted type of written orders. They should give first such information of the enemy and his own troops as may be necessary, then his task and the general manner in which he intends to carry it out, and after that, detailed orders for the units at his disposal.

The importance of giving orders in a firm tone of voice and in a calm, determined manner cannot be exaggerated. Whenever verbal orders are issued they should be confirmed in writing as early as possible.

The passing of verbal orders and messages should be reduced to a minimum owing to the liability of errors in transmission. In the leading platoons all verbal messages must be passed as quietly as possible. The fewer the individuals by whom the message has to be repeated, the less chance will there be of errors creeping in.

5. In cases where communications have broken down, officers must be on the look out for, and be alert to act upon, any indications expressed by the movement or absence of movement of their own troops or those of the enemy, so that they may be able to carry out the task allotted them.

4. Fire direction and fire control.

1. To obtain full value from the rifle, its powers and limitations must be understood, and its fire applied with intelligence towards the object in view.

2. However skilful individual men may be in the use of their weapons, the greatest effect is produced by their fire only when it is efficiently directed and controlled. The selection of targets on which fire is to be brought to bear is the responsibility of the platoon commander. Fire is controlled by the fire-unit commanders, who give the necessary executive words of command. Whenever the platoon is deployed into section columns, or posts, the fire-unit commanders will both direct and control the fire of their units. At close ranges, or where men are widely extended, it may happen that the transmission of any fire order is

impossible, and that each individual man must control his own fire.

3. The normal infantry fire-unit is the section, though under certain conditions at the longer ranges the fire of a platoon may be controlled by its commander. The efficiency of section commanders is therefore of paramount importance.

4. The value of a fire-unit commander depends upon his ability to apply the fire of his unit at the right time and in the right volume to the right target.

5. In addition to his other duties, the fire-unit commander is responsible for :—

- i. Indicating targets.
- ii. Issuing orders for sighting, and when possible, supervising the correct adjustment of sights.
- iii. Regulating the volume of fire ; whether deliberate or rapid.
- iv. Reporting when ammunition is running short.

6. When from his position it is possible for him to do so, the platoon commander decides as to the time for opening fire, subject to such orders as the battalion or company commander may issue. In the defence, when the platoon is concentrated, he also normally arranges for the distribution or concentration of fire, and indicates the targets generally to his subordinates ; but in the attack these duties will usually devolve upon the section commanders.

7. In forming a decision as to when fire should be opened, the following considerations must have weight :—

- i. The early opening of fire discounts surprise and, whether in attack or defence, often indicates the positions of troops which would otherwise be unnoticed by the enemy. In attack it may unnecessarily delay the advance.

- ii. Beyond 1400 yards the fire of even large and well-controlled units of infantry seldom has much effect. Exceptional circumstances, such as the appearance of considerable bodies of the enemy in vulnerable formations, may, however, justify the use of long-range fire, especially by Lewis guns and machine guns.
- iii. Between 1400 and 600 yards, carefully controlled collective fire produces better results than the uncontrolled fire of individual men, which ceases to be sufficiently effective beyond ranges of about 500 yards to justify the expenditure of ammunition involved.

8. Fire should therefore rarely be opened by infantry in attack when satisfactory progress can be made without it. The leading troops in particular should save every possible round for close range, as the replenishment of ammunition at that time will be a matter of considerable difficulty. When progress is no longer possible fire should be opened by those platoons or sections unable to advance, in order to cover the movement of troops on their flanks. Subject to these principles fire may be opened in attack when there is a probability of its producing good effect, or when withholding fire might lead to heavy loss.

9. When infantry is acting on the defensive, there is usually less difficulty in arranging for the supply of ammunition. Fire may, therefore, be opened at longer ranges than when attacking, if it seems probable that any advantage will be gained thereby, especially when it is desired to prevent the enemy from coming to close quarters, and when the ranges have been ascertained beforehand. If, however, the object

to gain decisive results, it is generally preferable to reserve fire for closer ranges and for surprise.

10. It is usually advisable to keep all the enemy's leading troops under fire in order to disturb their aim and hinder movement, but against very vulnerable targets fire may be concentrated with advantage.

11. Oblique or enfilade fire has greater moral and material effect than frontal fire. Such fire comes usually from an unexpected direction and the target presented to it is generally more vulnerable. In defence, opportunities for the employment of enfilade fire by machine guns and Lewis guns should be created by careful pre-arrangement between the battalion, company and platoon commanders of adjoining units.

12. In deciding on the volume of fire to be directed against the enemy at any particular time a commander should consider chiefly the tactical situation, the target presented, the effect it is desired to produce, the range, and the state of the ammunition supply.

Rifle fire should, as a rule, be delivered deliberately, each man satisfying himself that every time he presses the trigger he will hit the object aimed at.

Rapid fire should be considered as a reserve of power to be used when the occasion demands it. It must combine accuracy with rapidity, and never degenerate into a wild expenditure of ammunition at the fastest possible rate.

Rapid fire may be required when it is necessary to beat down the enemy's fire quickly; when covering the advance or withdrawal of other troops exposed to enemy fire; when pursuing an enemy with fire; when meeting cavalry attacks; or when good targets are exposed for a very short period; also in attack by covering troops, as a final preparation for

the assault by troops who have worked round the flanks ; and, in defence, to beat off an enemy in the act of assaulting. It may also be employed to deceive the enemy as to the strength of the force engaged. The effect of surprise by a sudden burst of accurate machine gun and Lewis gun fire from an unexpected quarter is very great. Short bursts of rapid fire, followed by pauses, favour observation of results and give time for adjustment of sights. They also facilitate the control of fire in critical situations. The duration of such bursts must be strictly controlled, and limited to the requirements of the occasion, for if rapid fire is continued for any length of time it excites and exhausts the firers, and leads to waste of ammunition.

13. A sudden effective fire will have a particularly demoralizing effect on the enemy ; it is often advantageous, therefore, to seek for surprise effects of this sort by temporarily withholding fire.

14. Wild, unsteady fire causes little or no loss and tends to encourage the enemy by inducing a belief in his mind that his opponent is shaken. It is, therefore, worse than useless.

15. Every available means should be used to obtain the correct ranges. Observers will be employed, as necessary, to assist in observation of fire, in watching the enemy and neighbouring troops, and in keeping up communication between platoons.

16. Observation of fire is the best means of ensuring that fire is effective. If uncertainty as to the elevation exists, it is better to under-estimate than to over-estimate the range.

5. *Fire discipline.*

A high standard of fire discipline in the men is not less important than skilful direction and control of fire by section commanders.

Fire discipline means strict attention to the signals and orders of the commander, combined with intelligent observation of the enemy. It ensures the careful adjustment of the sight, deliberate aim, economy of ammunition, and prompt cessation of fire when ordered or when the target disappears.

It requires of the men endurance of the enemy's fire; even when no reply is possible; and a cool and intelligent use of the Lewis gun and rifle when superior control can no longer be exercised.

6. *Fire and formations in battle.*

1. In battle, formations will be governed mainly by the enemy's fire and the nature of the ground. The aim will be to move in the most concentrated formation possible, in order to retain control and ability to manœuvre, whilst avoiding loss from hostile fire.

Thus, under artillery fire, the battalion will deploy into company columns, platoon columns, or sections, according to the severity of the fire.

2. At effective ranges, troops advancing steadily and rapidly suffer less than when they remain lying down, even under moderately good cover. This is due to the moral effect on the enemy and to the constant alteration of the range. In retiring, losses are always heavier than in advancing.

3. Against artillery fire, or long-range infantry fire, small shallow columns, each on a narrow front, such as platoons in fours or sections in file, offer a difficult target while admitting of efficient control. These columns, making full use of the ground, should be on an irregular front, so that the range from the enemy's guns to each is different.

Infantry coming suddenly under artillery fire will usually avoid loss more easily by advancing than by halting and

making use of cover, the position and range of which will probably be known to the enemy.

4. Although serious effect from aimed infantry fire is not to be anticipated at ranges beyond 1,400 yards, zones of considerable width, beaten by machine gun fire, may have to be crossed at such ranges. It is necessary that troops should be prepared for this and be ready to adopt loose and flexible formations, which will reduce casualties. Fire at these long ranges has so steep an angle of descent that effective cover from it may be difficult to find.

5. As a general rule sections should deploy directly they come under effective rifle or machine gun fire. Deployment may be into simple line or into an arrow-head formation with the flanks thrown well back. Such a formation is no more vulnerable to fire than an extended line, while it gives the section commander greater powers of control and of manoeuvre if he wishes to change direction and to take advantage of cover.

6. In close country, *e.g.*, woods, bush, &c., or when advancing along covered lines of approach such as hedges, banks or water-courses, the best formations for sections to adopt is file or single file.

7. When firing, men should take advantage of any available cover, breaking the formation if it is necessary to do so, as, for instance, in lining a bank. As they resume the advance, the sections will again adopt the formation which is most suitable to the nature of the ground and of the enemy's fire.

8. The section commander must use his intelligence and change from one formation to the other as the ground dictates.

9. The fire effect which infantry can develop against cavalry is such that infantry which is ready to open a steady and timely fire has nothing to fear from a cavalry charge,

provided the cavalry cannot find dead ground over which to approach. Any formation which allows fire to be delivered quickly and accurately is suitable for meeting cavalry. Even if cavalry succeeds in riding through infantry it can inflict little loss upon it if the infantry holds its ground. Whenever there is a possibility of being charged by cavalry, special care must be taken to watch and guard the flanks.

10. Artillery coming into action, limbering up, or in movement, is a vulnerable target against which rapid fire or even fire at long infantry ranges is justifiable. Infantry can best obtain decisive effect against shielded guns by means of enfilade or oblique fire, but even with direct fire it can prevent movement and interfere with the service of the guns.

11. Machine gun platoons with their guns on limbered wagons are as vulnerable as artillery limbered up. Machine guns in position are a difficult target; to obtain good effect against them it is usually necessary to employ artillery, mortars or machine guns.

12. Infantry is responsible for its own protection against hostile aircraft flying at a lower altitude than 3,000 feet. Lewis guns and the fire of rifle sections should be employed for this purpose. (See Sec. 31).

7. Fire and movement.

1 The bedrock of infantry tactics is the principle of fire and movement.

Success, whether in attack or defence, largely depends on the skilful combination of these two elements and will be achieved by the study of:—

- i. Fire.**—The characteristics of the infantry weapons and the conditions under which each is most useful.

ii. *Movement.*—All ranks must know how to move with the least loss and fatigue to themselves by making the best use of ground. Officers and non-commissioned officers must also understand the most suitable formations to adopt to reconcile the need for maintenance of control with the minimum vulnerability to hostile fire.

2. In attack, the task of the infantry is to close with the enemy's infantry and destroy it. To effect this, the infantry must use movement to get to close quarters, advancing from cover to cover, avoiding fire by quickness of movement, and finally, by movement, endeavouring to work round the enemy's flank. With fire the infantry covers its own movement, by beating down the enemy's fire and forcing him to take cover. The main task of the other arms is to effect this result, but infantry must always be prepared to rely on its own fire to help it forward. Finally, when the infantry has come to close quarters with the enemy, by combining fire and movement, it must complete his overthrow by assault. This will usually be delivered with greatest effect from a flank.

3. In defence, the infantry use their fire to beat off the enemy's attack, while the skilful use of movement will often help to delay the enemy's advance. A combination of fire and movement is essential to success of any counter-attack.

8. *Movement in presence of the enemy.*

1. In the case of advanced or rear guards in contact with, or in the vicinity of, the enemy, security is the first need until the enemy is located and preparations for action have been completed. In a definite attack the objective is the primary consideration and security is necessarily subordinate to it.

2. In situations where security is the first essential, all movement should be effected by bounds.

3. This method of movement by bounds applies also to all isolated bodies of troops liable to be surprised by the enemy, or by the action of a hostile population.

4. The forward body of the unit (battalion, company or platoon) should make a bound to a tactical position from which it can cover the movement of the supporting body. During this bound it will be covered by the fire, or readiness to fire, of the supporting body. As soon as the forward body has completed its bound, it takes up a position ready to cover the supporting body, while the latter is moving to a position from which the next bound can be covered.

5. This system applies both to the smallest parties, such as a patrol, or a section with its scouts ahead, and to large forces.

6. The length of a bound will be determined by the nature of the ground. If possible it should be made from one tactical point to another, provided that the forward body does not get beyond the limits of effective protection from the supporting body. This condition is of vital importance, as otherwise the forward body may be overpowered without the supporting body knowing or being able to intervene; as a result the supporting body may then fall into the same trap, an eventuality which this system of movement by bounds is specifically designed to prevent.

7. A retirement will usually be best carried out by the alternate bounds of the two bodies of troops, in order to distribute equally the strain of holding off the enemy. By this method the forward body retires to a position in rear of the supporting body; then the supporting body in its turn, covered by the fire of the forward body, retires to a position behind it again.

9. *The use of ground.*

1. The object of the use of ground is to conceal from the enemy the strength, dispositions, movement and intention of bodies of our own troops. By skilful use of the ground the enemy can be surprised and the way to the most vulnerable portions of his defence found. On the other hand, losses can be reduced by taking advantage of the cover which the ground affords.

2. Loss in crossing ground within range of the enemy's fire can be reduced in two ways:—

- i. By concealment of movement.
- ii. By rapidity of movement.

Before making any movement in battle the leader will decide which method he will use and order it accordingly.

3. Throughout the action all leaders will study the ground and note such features as the following:—

- i. *Concealed lines of approach* which allow their troops to gain ground towards the enemy or to outflank and surprise him.

In defence such features must be noted with a view to counter-attack or withdrawal, and also to guard against their use by the enemy.

- ii. *Ground concealed from the enemy's view or fire* to which rapid movement can be made or from which an assault can be delivered.

In defence such ground is of use for surprising the enemy, and, provided there is a sufficient field of fire, considerations of concealment constitute an important factor to be weighed in the choice of a position. This factor increases in importance in proportion to the amount of artillery and other fire support possessed by the enemy.

- iii. *Ground open to hostile fire* which can only be crossed by means of a rapid bound or by an advance by rushes under covering fire.

In taking up a defensive position, such ground within the position should not be crossed by the troops unless absolutely necessary.

- iv. *Ground giving a good view of the enemy* which affords a position from which fire can be brought to cover the advance of other troops.

In defence a good field of fire is the chief factor to be considered, although the necessity for cover must not be overlooked.

4. In every case the infantry leader who has developed by practice an eye for country will save the lives of his own men at the expense of those of the enemy's.

Practical instruction will be given in the use of ground. The soldier will be taught that the most important requirement in cover, when firing, is that he can use his weapons to the best advantage. Junior officers should constantly set themselves problems based on the country of their day-to-day surroundings, which require the quick selection of a line of attack on a definite objective, or of a position in defence. They should at the same time decide as to how they would dispose of their men.

5. Some of the chief types of cover to be met with are :—

- i. *Folds in the ground*.—This form of cover is the most common and simplest, but requires the most training to appreciate at its full value, because it is the least obvious.

Skilfully used it is of great value, as it affords no ranging mark for the enemy. This should be demonstrated by placing a few men in suitable folds, or making them advance from fold to fold, whilst the remainder watch and take aim at them.

- ii. *Shell-holes*.—These are to all intents an artificial form of folds in the ground. They are particularly useful as positions from which to fire rifle or smoke grenades.
- iii. *Hedges and bushes*.—These afford cover from view but not from fire unless there is a ditch or mound behind them. Where they run across the line of advance, however, they afford a good ranging mark to the enemy and are, therefore, dangerous.
- iv. *Trees*.—If sufficiently thick, trees give protection against bullets. They are dangerous where the undergrowth is likely to catch fire. Isolated trees afford good ranging points to the enemy, and for this reason should be avoided.
- v. *Sunken roads or the dry beds of streams and ditches*.—These afford valuable natural trenches which can be improved by burrowing into the bank nearest the enemy. On the other hand, the hard surface of a road increases the effect of shells bursting on them, while they are easy to range on. The danger of being enfiladed must be particularly guarded against.
- vi. *Walls*.—These afford cover from both view and fire, though they are apt to splinter. They are, however, easy to range on.

10. *Infantry weapons.*

I.—The Rifle and Bayonet.

1. The rifle and the bayonet are the infantryman's chief weapons. The rifle prepares the way for the assault and the bayonet completes the work of the rifle. The battle can only be won in the last resort by means of these weapons. The first requirement in an infantryman is, therefore, confidence in the rifle and bayonet, based on his skill in their use.

II.—The Lewis Gun.

2. The two Lewis gun sections give the platoon the power of delivering a heavy volume of fire with the employment of a few men.

3. In attack the principle of the employment of the Lewis gun sections is to cover the advance of the platoon and to beat down hostile fire until the rifle sections get within assaulting distance.

4. In defence well sited Lewis guns enable the platoon commander to hold his ground with only a few men, the rifle sections being kept in readiness under cover for counter-attack.

5. Lewis guns rapidly use up ammunition. Their fire should, therefore, be reserved for covering the advance of the rifle sections, for surprise effect, and for deep targets such as enemy in close formation. Short, well aimed, bursts are the most effective form of fire. Fire must cease the moment the target disappears or when there is no longer need for covering fire.

6. A Lewis gun section like all other units is responsible for its own protection and the men must be disposed accordingly both when halted and on the move. As only two

men are required to fire the gun the remainder are available as scouts, as riflemen, and for replenishing ammunition.

7. When a platoon is advancing under cover of its own fire, Lewis gun sections should move by bounds to positions previously selected by their scouts. When working as a pair, one section should be firing or be ready to fire while the other is on the move. The employment of Lewis guns against aircraft is dealt with in Sec. 32.

III.—The Hand and Rifle Grenade.

8. The infantry's chief weapons of destruction are the rifle, bayonet and Lewis gun. Grenades must be reserved solely for the few occasions when other weapons cannot be used with effect, *i.e.*, to kill or force into the open an enemy who remains underground or behind cover in trench attacks.

9. Hand grenades can only be thrown a short distance, and if used in the open they are as dangerous to our troops as to the enemy. Their indiscriminate use consequently forces our own troops to ground and brings the attack to a standstill. Even in a trench system success can be won more cheaply and more speedily by movement above ground covered by fire from rifle, Lewis gun, and rifle grenade than by the use of hand grenades.

10. In trench raids and small offensive actions men with grenades may be placed as piquets in side trenches, over dug-outs, &c., to deal with the enemy's reinforcements or to force them into the open where they can be dealt with by rifle and Lewis gun fire.

11. In dealing with enemy's machine guns in position, &c., rifle grenades may be of value to assist the

assaulting infantry to reach the position. They can be employed to supplement covering fire for troops advancing against enemy positions in enclosed country, woods and villages, in house to house fighting, &c. Concentration of rifle grenade fire at various targets in succession usually has the best result. In the case of trench raids, rifle grenades can be employed to cover the withdrawal of troops to their own lines.

12. In the defence, grenades may be of use to deny to the enemy hollow ground or trenches which cannot be covered by other fire or in clearing trenches in which an enemy gains a footing.

IV.—The Light Mortar.

13. The value of the light mortar lies in its power to search ground which cannot be dealt with by rifle, Lewis and machine gun fire; in the rapidity and accuracy of its fire; and in the facility with which it can be concealed.

14. The mortar accompanies infantry in the attack and, as it can move quickly from one position to another, it is available for the close support of the leading platoons. Its mobility is, however, limited owing to the difficulty of ammunition supply and its fire should, therefore, be reserved for those portions of the enemy's defences which cannot be overcome by the fire of rifles, Lewis guns or machine guns. Smoke in small quantities can also be employed with advantage by mortars to cover infantry movements.

15. In attack the light mortar can best assist the leading platoons by overcoming isolated machine guns and defended posts or by keeping these localities under fire or smoke while the infantry works round them. It can also be usefully employed in engaging enemy forces behind cover or in sunken roads, ravines and houses.

Officers in charge¹ of mortars should be well forward with the leading platoons so that they can when necessary bring their mortars into action without delay.

16. In defence light mortars assist the infantry in breaking up hostile attacks and in covering counter-attacks and withdrawals.

17. The organization and employment of light mortar sections are dealt with in the Appendix.

11. *The use of smoke.*

1. Smoke is a powerful auxiliary weapon because by its use *concealment of movement* is obtained.

Its employment is, however, limited for the following reasons :—

i. The amount of transport required for its use on a large scale.

ii. The interference in operations or observation in one area caused by smoke drifting from another area in which it has been projected.

iii. The absence of destructive power.

2. The principle of the use of smoke is that the enemy should be blinded by a screen, behind which movements take place in full light.

3. Smoke can be used by artillery, tanks, mortars, or aeroplanes, whilst the infantry employ it by means of rifle or, more rarely, hand grenades and light mortars.

4. A guiding factor in the use of smoke will always be the state of the weather and ground. In dry weather and on a dusty soil, the smoke and dust caused by high explosive and shrapnel shell are usually such as to surround the infantry actually engaged in a big battle with a haze which of itself, without the use of smoke, greatly hinders observation of their progress and the incidents of the fight. Observers

beyond the immediate zone of close conflict may, however, be able to observe the general progress of the battle and a smoke screen may be required to obstruct their view.

5. Smoke can be used in any wind, but a wind from the flank presents the condition under which a frontal screen can be most effectively and economically formed by smoke. On the other hand, a wind blowing direct from the front or rear is more favourable for the formation of a screen on a flank.

If a frontal screen is to be formed in a head wind it must be fired sufficiently far beyond the enemy to ensure that it does not blind the attackers while leaving the enemy in clear atmosphere.

12. *Smoke in attack.*

1. Smoke makes it possible for the attacker to get to close quarters and to surprise the enemy from an unexpected direction, in the minimum of time and with a minimum of loss.

2. Infantry smoke grenades must be fired at the enemy—not in front of the attacking infantry.

3. The attacking platoons may also use smoke to cover an advance over open and exposed stretches of ground; to screen an exposed flank, so that the attackers may push forward; and in position warfare, to cover their own raiding parties.

13. *Smoke in defence.*

1. The use of smoke by infantry in the defence is dangerous, owing to the probability of observation being obscured. It should therefore only be used to cover movement such as a counter-attack, withdrawal, or reinforcement.

2. In a counter-attack, it should be used just before the attack, to blind the enemy's infantry, and so surprise them, but must only be projected at the last moment or it will draw fire.

3. In a withdrawal smoke is of great use, as it saves casualties, enables covering parties to remain longer on forward slopes, and allows troops to be withdrawn in closer formation and under better control. It should be fired in bursts.

4. Against an enemy using smoke to cover an attack, it is best to fire short bursts of cross fire from Lewis and machine guns on suspected lines of approach. Patrolling should be carried out. In the defence of a defence post or defended locality against a local attack, it may be advisable to take up a point on a flank or in rear, so as to catch the enemy unawares as he emerges from his own smoke screen. In temporarily vacating any position, its importance, and the effect on the neighbouring troops of its loss should the counter-attack fail, must first be considered.

5. Light signals are one of the best means of communication in the defence against an enemy using smoke grenades.

14. Use of smoke by artillery and mortars.

1. The use of smoke by artillery will normally be: in preparing the way for an attack; covering the concentration for the counter-attack by smoke sufficiently far forward not to attract fire, while blinding the enemy's artillery observers; placing a smoke screen on the flanks. The smoke screen should be prolonged, if possible, beyond the limits of the front to be attacked so as to deceive the enemy as to the real point of danger. The closest liaison between artillery and infantry is essential when smoke is being used.

2. Artillery and mortar gas shell may be fired in conjunction with the smoke before the real attack, to keep the enemy in suspense and so force him to hamper himself by wearing gas masks.

3. Smoke can be projected from mortars, but except when the employment of smoke by these weapons forms part of the general plan, it should only be used in cases of purely local objectives, such as the capture of a defended post. The employment of smoke in such cases must not be on such a scale as to interfere with the plans of the superior commander or of formations on a flank, and with observation from the air.

15. *Artillery escorts.*

1. Artillery on the field of battle is generally protected by the distribution of the other arms. Batteries which have a clear field of fire can protect their own front; the flanks and rear of a line of guns are its most vulnerable parts.

2. Should the guns not be protected by the existing distribution of troops, a special escort should be detailed, and if this has not been done, it is the duty of the artillery commander concerned to apply to the commander of the nearest troops, who must provide an escort. The duties of this escort will be:—

- i. To give timely warning of any threatened attack.
- ii. To keep hostile bodies beyond effective rifle range of the guns, or, in case of necessity, to cover the withdrawal of the guns.

3. All ground within rifle range which might afford concealment to an enemy should either be occupied by the escort or be under its effective fire. The escort commander should place

where he can best superintend his command, and rapid communication between himself and the artillery commander. The senior officer present, whether artillery commander or escort commander, will issue the necessary instructions to the escort, but the escort commander must in either case have a free hand in carrying them out.

16. *Working parties and tasks.*

1. All arms are responsible for the construction of ordinary field works without any technical assistance from the engineers. Such work will include the construction of defensive systems, the provision of cover from fire and the construction of obstacles.

Field works should be regarded as a military duty and should be executed as a military operation.

Infantry commanders will be responsible for siting, organizing and constructing field defences. Infantry officers must study the most suitable types of defences and the details of siting, depending on armament, ground, concealment, &c.

The engineers will normally be employed only on works requiring technical skill, special tools, or especially elaborate organization, such as the construction of rear position defences.

2 Field works required by the infantry may therefore be divided into two classes:—

- (a) *Work for which infantry formations and units are responsible.*—This will be carried out under the orders of the infantry commanders with materials supplied by the engineers, but without engineer assistance or supervision other than technical advice or minor assistance in technical details, such as fixing of timbers in complicated shelters, &c. The provision of this technical advice or

minor assistance is the duty of the liaison officers with infantry formations.

- (b) *Work for which the engineers are responsible.*—This will be carried out solely by engineer units or by engineer units with the assistance of working parties from infantry or other units, or civil labour.

In the work under class (b), there will be two principal officers involved :—

- i. The engineer officer in charge of the work.
- ii. The officer in command of the working party (in the case of infantry, the company or platoon commander).

3. The officer in charge of the work is responsible for making the preliminary reconnaissance; tracing out the work; supplying materials and extra tools if necessary; supplying guides to bring the working party to the site of the work. He must also see that arrangements are made for provision of any covering party that is required—in addition to the working party.

4. The officer in command of the working party is responsible for the disposal of the men on the work, that all orders as regards smoking, lights, talking, are strictly obeyed, that there is no idling, that no man withdraws or is allowed to leave his task unfinished without reference to the officer in charge of the work or his representative.

It is also his responsibility to decide whether in the event of suffering serious casualties the men should be temporarily withdrawn or an attempt made to carry out his task at all costs. If heavy casualties are anticipated the authority which orders the work must give definite directions as to its relative urgency.

5. The officer commanding the working party will decide, in consultation with the officer in charge of the work, how best to distribute his men; this should be done by sections and platoons.

The limits of each platoon and company should be clearly marked and each guide should be shown to what point to bring his party and the extent of its task.

6. The arrival of the parties must be so timed that one party does not have to wait while another is being put on to the work.

7. The officer in charge of the work will decide on the number of men required. The officer who details the working party will arrange that it is composed of complete formations whose numbers approximate to those originally demanded. This ensures that the men work in complete units under their own officers and that a proper proportion of non-commissioned officers, stretcher bearers, etc., are also detailed.

It may not be possible to adjust these exactly but the importance of detailing complete formations as against detachments of certain numbers is paramount.

8. All working parties will have sentries posted over them to give warning of the approach of hostile aircraft, &c. When in close touch with the enemy working parties will have covering troops out in front as well as their own sentries. Arms and ammunition will be placed in readiness in case of alarm. Gas helmets must always be in "alert position" in forward areas.

In rear areas, arms and equipment may be left under guard in a convenient spot.

9. A normal method of forming up on a task is as follows :—
- i. The working party is formed in single file and moves to one of the flanks of the task.
 - ii. The leading man halts on the right (or left) of his task, and the man following him wheels inwards to a point on the task two paces to the inner flank of the leading man.
 - iii. The remainder on reaching the alignment of the task wheel inwards in succession and take up their position two paces from the preceding man.
 - iv. It is advisable for an officer or N.C.O. to mark each man's position on the task as he moves into line.

CHAPTER II.

PROTECTION.

PROTECTION WHEN ON THE MOVE.

17. *General principles.*

(See F.S.R., Vol. II, Chap. VIII.)

1. A force when on the move can only be regarded as secure from surprise when protection is furnished in every direction from which attack is possible.

Infantry are employed on protective duties while forming part of :—

- i. Advanced guards.
- ii. Flank guards.
- iii. Rear guards.

2. The whole object of advanced, flank and rear guards is to preserve the freedom of action of the commander of the whole force.

This is effected by :—

- i. Securing information about the ground, the movements and location of the enemy.
- ii. Ensuring the protection of the main body from surprise or interference by the enemy.
- iii. Containing the enemy when he is met, so that the commander of the force may be afforded time to develop his plan of action.

3. The action of protective troops must always be based on the interests and intentions of the commander of the whole force.

18. *Advanced guards.*

1. Infantry forming part of an advanced guard to a force advancing must act with the greatest vigour and speed. They must drive off all small parties of the enemy's screening troops as quickly as possible, in order not to delay the advance of the main body.

In order to assist the commander to carry out his plans, the best action of an advanced guard will usually be to attack the enemy when he has been located. Such a course will throw the opposing troops on the defensive and place them at the disadvantage of having to defend hastily chosen positions. If the enemy is in strength it has the advantage of forcing him to disclose his numbers and thereby affording valuable information to the commander of the force. But such action must always be in accordance with the plans of the commander (*see F.S.R., Vol. II, Sec. 83, 2*).

2. Speed of advance is the first consideration when not in contact with the enemy. Hence an advanced guard will move on a narrow front along roads and other channels of communication with such distances between advanced and supporting bodies as to avoid possibility of surprise.

3. When in contact with, or in the vicinity of, the enemy, security and speed of advance are equal considerations. Hence the advanced guard should move by bounds on a broad fighting front across country.

4. In such cases a battalion might have one company forward as an advanced guard. This company might be deployed in diamond formation, and the forward and flanking

platoons also. The reserve platoon should be kept concentrated as long as possible. This formation has the advantage of affording protection against surprise, while at the same time allowing time and space for manœuvre if either the forward or one of the flanking platoons encounters the enemy.

5. A broad frontage will enable the ground to be covered by observation, avoid the danger of surprise enfilade fire from tactical points on the flanks and allow room for deployment and manœuvre.

6. The forward and the two flanking platoons should normally have a rifle section forward. They should send a pair of scouts ahead, who should move by bounds, signalling back with their rifles "no enemy in sight" or the reverse. The distance the scouts should be ahead will be determined by the nature of the ground. They should keep within view of the forward section.

7. If the scouts come under fire, the remainder of the section should move to the nearest fire position from whence fire can be opened.

8. Scouts and the forward sections should not advance on a direct line. They must use all available cover and commanding ground from which they can observe the country over which their platoon is moving. This applies equally to larger forward bodies.

9. The supporting companies will follow in a similar manner at a suitable distance.

10. Mounted officers should make the fullest use of their horses. Thus they will be able to exercise fuller control and save themselves unnecessary fatigue.

11. When following up enemy rear guards, after breaking through a hostile position, the same principles as laid down

above will be followed. This course of action must, however, be distinguished from the pursuit of a disorganized enemy. In this case speed and relentless pressure are the first essentials, though reconnaissance and precaution should not be relaxed. Further success will often depend on the initiative displayed by local commanders.

12. In each of the above cases when the enemy's positions are definitely located, the action of advanced guard infantry will be based on the principles and tactical considerations laid down in Chapter III for the attack.

19. *Flank guards.*

1. If danger is anticipated from a flank, a flank guard should be pushed out in that direction. When a force is marching across the probable line of advance of the enemy, the question as to whether an advanced guard will be needed as well as a flank guard, must be solved on the merits of each individual situation. In such a case, to employ a large advanced guard may be a violation of the principle of economy of force; on the other hand, to fail to do so may not satisfy the principle of adequate protection at all times. In any case, scouts or patrols will always be necessary to cover the front of the unit or formation.

2. The rôle of infantry forming a flank guard to a force is to protect it from surprise or interference by the enemy. Although this rôle is in the main defensive, vigorous local offensives may be necessary to drive off hostile advanced troops. It is essential, however, that such local offensives should not be allowed to develop beyond the point of easy disengagement. In such an event, the situation must be reported to the commander of the whole force in order that another flank guard may be detailed to protect the force

during the remainder of the march. If attacked, the object of the flank guard will be to delay the enemy for the time necessary to secure the undisturbed movement of the main body. In this case, therefore, the principles governing its action will be similar to those laid down in Sec. 53, for retirements.

20. *Rear guards.*

1. The general principles governing the action of rear guards are contained in F.S.R., Vol II, Secs. 86, 87, 88 and 89.

2. In retiring under fire, portions of the firing line should usually retire alternatively, affording each other mutual support by taking up successive fire positions at some considerable distance apart, from which the retirement of the portion nearest the enemy can be covered.

PROTECTION AT REST (OUTPOSTS).

21. *General principles and rules for outposts.*

1. Every body of troops when halted will be protected by outposts, in order that it may rest undisturbed.

2. To see without being seen is one of the first principles of outpost duty. All troops on outpost must therefore be concealed.

3. A force can only be regarded as secure from surprise when every body of the enemy within striking distance is so closely watched that it can make no movement which does not immediately become known to the outposts.

It is the duty of outposts to give warning of any threatened attack, and in the event of an attack to gain time at any sacrifice for the commander of the force protected to put his plan of action into execution.

While the first duty of the outposts, therefore, is observation of the enemy, the second is resistance.

4. *Observation of the enemy* will consist of—

- i. Keeping such a close watch on all bodies of the enemy within reach of the outposts that no movement can be made unobserved.
- ii. Watching all approaches along which an enemy might advance.
- iii. Examining all neighbouring localities in which his patrols might be concealed, or which he might occupy preparatory to an attack.

Resistance will consist of delaying the enemy on a prepared defensive line, called the outpost line of resistance, until further orders are received from the commander of the force protected.

5. Outpost troops will usually consist of all arms. The mobile troops will be responsible for observation at a distance from the outpost line, and the infantry for observation of the area immediately in front of the outpost position. All arms are required for the duty of resistance. Artillery and machineguns can, however, only be employed in strength with outposts if they occupy the ground which the main body is to hold in case of attack.

The outpost mobile troops will carry out their duty by means of patrols pushed well forward in the direction of the enemy. The outpost infantry will be divided into piquets and supports, the former to furnish sentry groups and to hold the outpost line of resistance, the latter to reinforce the piquets when required. When the opposing forces are within close touch, outpost infantry will also be required to furnish patrols, and on occasions a portion of it may be held back to form an outpost reserve (*see* Sec. 23).

6. Outpost work is exhausting. Not a man nor a horse more than necessary must be employed. The duty of observation must never be relaxed; the number of troops detailed for resistance will depend on the ground, the proximity of the enemy, and the tactical situation.

7. When there is any chance of a force coming in conflict with the enemy, the commander, before halting, should first decide on his dispositions in case of attack, and then arrange the quartering of his command and the general position of the outposts.

8. The distance of the outpost position from the troops protected is regulated by the time which the latter will require to prepare for action, and by the importance of preventing the enemy's field artillery from approaching within effective artillery range of the ground on which these troops will deploy if attacked. On the other hand, especially in the case of small forces, the distance must not be such as would permit of the outpost being cut off, or as would necessitate the employment of an undue proportion of men on outpost duty.

9. The commander will, when necessary, divide the outpost line into sectors, delegating responsibility for the holding of each sector to the commander of a subordinate unit or formation, and defining the limits of sectors by distinctive features, such as trees or cottages. The tops of hills or the bottoms of valleys are not suitable as tactical boundaries; roads should be inclusive to one or other sector. Each subordinate commander concerned will detail the necessary troops for his own sector, and will appoint an officer to command them, who is designated the outpost commander.

The subordinate commander concerned will be responsible that his outposts arrangements are co-ordinated with those of the sectors on his flanks.

10. In the case of a small force the commander will usually himself detail the whole of the outpost troops, and will either retain the command in his own hand or appoint an officer to command them.

11. Detachments in close proximity to the enemy must avoid useless collisions. Attempts to carry off detached posts, sentries, &c., unless with some special object, are to be avoided, as they serve no good end, give rise to reprisals, and tend to disturb the main body.

12. Outposts stand to arms and patrols are sent out one hour before it begins to get light, and they will remain under arms until the patrols report that there is no sign of an attack.

13. Signal communication must be maintained at all times between all parts of an outpost position, and between the outposts and the main body.

14. No compliments will be paid on outpost duty.

22. Duties of an outpost commander.

1. Before the force halts, an outpost commander should be given information on the following points :—

- i. What is known of the enemy and of other bodies of our own troops.
- ii. Intentions of the commander who appoints him if the enemy attacks, and in particular the line of resistance of the main body.
- iii. Where the force to be covered will halt.
- iv. The general position to be occupied by the outpost troops under his command, and if there are other troops on his flanks, the limits of the line for which he is responsible.

v. Detail or the troops allotted to him.

- vi. Hour at which the outpost troops will be relieved.
- vii. Where reports are to be sent.

2. After receiving the above information he will give such orders as are immediately necessary for protection against surprise. He will then allot tasks to his mobile troops, and will decide on a line of resistance for the outpost troops. When there are other outpost troops on his flanks, he will co-ordinate his arrangements with those of his neighbouring outpost commanders, and will ensure that no ground on his flanks remains unwatched.

3. In choosing an outpost line of resistance, he should remember that retirements of advanced troops to a supporting line are dangerous, particularly at night. As a general rule, therefore, the piquets should be posted on the line of resistance, which must be chosen with this object in view.

Co-operation, inter-communication, and the exercise of command will be facilitated by placing the piquets along well-defined natural features, or in the vicinity of roads: but this must not outweigh the necessity for the best tactical dispositions possible. If the force is likely to remain halted for several days, especially if a period of position warfare is expected, commanding ground is of great value to the artillery. On the other hand, if halted for only one night, commanding ground is not essential.

4. As soon as the foregoing details have been decided on an outpost commander will issue orders on the following points:—

- i. Information of the enemy and our own troops so far as they affect the outposts.
- ii. General line to be occupied by the outposts: frontage, or number of roads allotted to each outpost section, and situation of the reserve (see Sec. 21, 9.)

- iii. Distribution of outpost mobile troops, artillery and machine guns.
 - iv. Dispositions in case of attack. Generally the outpost line of resistance.
 - v. Special arrangements by night.
 - vi. Smoking, lighting fires, and cooking.
 - vii. The hour at which outposts will be relieved.
 - viii. The place to which reports will be sent.
5. The outpost commander will decide whether the reserve is to occupy quarters or to bivouac, and whether the supports or reserves may take off accoutrements, off-saddle, unhook, and unharness teams, &c.
6. As soon as the outposts are in position he will inform the commander who appointed him.

23. *The reserve.*

The necessity, or otherwise, for the provision of a reserve depends on circumstances, such as the size of the force to be covered, the proximity of the enemy, the probability of attack, the time required by the troops protected to come into action in case of attack, the distance of the outposts from those troops, and the nature of the ground. It lies with the outpost commander to decide whether any of the troops allotted to him shall be used as a reserve.

24. *Duties of the commander of an outpost company.*

- 1. Outpost companies provide piquets, detached posts, and supports, as required.
- 2. The commander of an outpost company, having received his orders, will move his command, taking precautions against

surprise, to the ground allotted to it, where the men will be halted under cover.

3. He will then examine the ground, decide on the number and position of the piquets, and, if necessary, of detached posts, required by day and by night, and on the position of the support. He will give instructions to the commanders of piquets and detached posts, and will arrange for a protracted resistance to be made on the line occupied by the piquets, which must correspond generally with the outpost line of resistance indicated by the outpost commander, and should support, and be supported by, the companies of either flank.

4. As soon as the piquets are in position and their groups and sentries posted, he will withdraw the covering troops. Such troops as are required for night dispositions only should not be posted till after dusk.

5. If it is necessary to send out patrols (*see* Sec. 29) he will make the required arrangements, deciding whether they should be furnished by piquets or supports. When the troops who covered the company's advance to the outpost position are available it is sometimes convenient that they, who already know something of the country in front, should be detailed for this duty.

6. He will communicate with the companies on the flanks of his position, and will ascertain the dispositions of those companies, so as to ensure no ground being unprotected. He will also maintain communication with the outpost commander.

7. Piquets, detached posts and supports will as far as possible be composed of complete units, the supports consisting of those platoons or sections not required for piquets and detached posts.

8. The distance of the support from the piquets will depend on the ground. The support should be able to reinforce the piquet line rapidly when required, yet should be far enough away to prevent the men's rest being unnecessarily disturbed.

9. When the company is watching a very extensive front it may be advisable to divide the support into two or more parts, or to detail a support to each piquet.

10. Communications between supports and piquets should be marked out in such a way that they can be followed easily at night without confusion. Every man of the support should be told exactly what he is to do in case of attack, and should be required, while daylight lasts, to get a clear mental picture of his surroundings.

11. Supports will maintain communication with their piquets, and, if there is one, with the reserve.

25. Duties of a piquet commander.

1. As soon as a piquet commander has received his orders he will move his command, by a covered approach, if possible, to a spot in rear of the portion of the piquet line for which he is responsible. He will then examine the ground and decide on the number and position of sentry groups required, both by day and by night, remembering that no more should be used than are absolutely necessary. By day, in open country, one sentry over the piquet, and one sentry group in front of it, may often be all that is required. He will then explain his orders to the piquet and will detail the various duties and their reliefs, including one or more single sentries over the piquet itself, for the purpose of communicating with the sentry groups and warning the piquet in

case of attack. Sentry groups required only for night dispositions will not be posted till after dusk.

2. In order to prevent the men being unnecessarily disturbed at night, he will arrange that the non-commissioned officers and men of each relief of the various duties bivouac together, and apart from the other reliefs. All reliefs should know exactly where to find the men of the next relief.

3. He will satisfy himself that every man of his piquet knows the direction of the enemy, the position of the next piquets, and of the support, and what he is to do in case of attack by day or by night. He will then post his sentry groups, satisfying himself that no portion of the frontage allotted to him is left unwatched, and will instruct sentries and commanders of sentry groups on the points enumerated in Sec. 26.

4. He will strengthen the position to be defended, providing accommodation for the support as well as the piquet, and will improve communications where necessary, without waiting for orders on these points, and will make the necessary sanitary arrangements.

5. He will impress on his men the importance, where possible, of getting a clear mental picture of their surroundings while daylight lasts, so that they may the more easily find their way about by night.

6. He will maintain communication with the piquets on either flank, arranging with them for mutual support, and while limiting as much as possible any movements in the line of sentries which might be visible to an enemy, he will satisfy himself that the sentries are alert and understand their duties.

7. Piquets will invariably be ready for action. By night the men must never lay aside their accoutrements. If

mounted men are attached to an infantry piquet they should, whenever possible, off-saddle, but one man should always be ready for instant action.

8. Not more than a few men should be allowed to leave the piquet for any purpose at one time. They should never be allowed to move about in or in front of the sentry line when seeking water, fuel, forage, &c.

26. *Sentries and sentry groups.*

1. Sentries in the front line are posted in groups, which consist of from three to eight men, under a N.C.O. or the oldest soldier. These groups remain on duty for eight or twelve hours, and thus require no reliefs when the force is only halting for the night. In open country one man is posted as a sentry, while the remainder lie down close at hand; but if the country is close, or special precautions are necessary, the sentry post may be doubled. Sentries should always be posted double when men are very tired.

2. The distance of a sentry post from the piquet depends entirely upon the ground. Sentries should be placed so as to gain a clear view over the ground in their front, whilst concealed from the enemy's view. To avoid attracting attention, they should not be permitted to move about; on the other hand, permission to lie down, except to fire, should only be given for special reasons, since sentries permitted to lie down may not remain sufficiently alert. Sentries must be made to realise the importance of their work, and their eyes and ears must always be ready to catch any indication of the presence or the movement of the enemy. Except at night, or in a fog, the bayonets of sentries should not be fixed.

3. On the approach of any person or party, a sentry will immediately warn his group. When the nearest person is

within speaking distance the sentry will call out *Halt*, take cover himself, and get ready to fire. Any person not obeying the sentry, or attempting to make off after being challenged, will be fired upon without hesitation. If the order to halt is obeyed, the group commander will order the person, or one of the party, to advance and give an account of himself.

4. Sentries must know, in addition to the points mentioned in Sec. 25 :—

- i. The direction of the enemy.
- ii. The position of the sentries on their right and left.
- iii. The position of the piquet, of neighbouring piquets and of any detached post in the neighbourhood.
- iv. The ground they have to watch.
- v. How they are to deal with persons approaching their posts.
- vi. Whether any friendly patrols or scouts may be expected to return through their portion of the line, and the signal, if any, by which they may be recognised.

and, by day—

- vii. The names of all villages, rivers, &c., in view, and the places to which roads and railways lead.

Commanders of sentry groups must, in addition, know what is to be done with persons found entering or leaving the outpost line (see Sec. 28). They must also be given explicit orders what to do in case of an advance in force by the enemy : whether they are to remain at their posts, which in this case must be protected from fire from behind as well as from the front, or whether they are to retire on the piquet. In the latter case they must be warned of the danger of arriving headlong on the piquet only just ahead of the enemy. In

consequence of this danger such retirements are rarely permissible at night.

27. Detached posts.

1. Detached posts from an outpost company may occasionally be necessary in front of, or to the extreme flank of, the line of resistance, to guard some spot where the enemy might collect preparatory to an attack, or which he might occupy for purposes of observation. They should only be employed in exceptional circumstances, owing to the danger of their being cut off.

2. The strength of a detached post will depend on the duty required of it, and may vary from a section to a platoon.

3. Detached posts act in the manner laid down for piquets and sentry groups. When only required for night dispositions they should not be posted till after dusk.

28. Traffic through the outposts.

1. No one other than troops on duty, prisoners, deserters from the enemy and flags of truce will be allowed to pass through the outposts either from within or from without, except with the authority of the commander who details the outposts. Inhabitants with information will be blindfolded and detained at the nearest piquet pending instructions, and their information sent to the outpost commander.

2. When there are large numbers of refugees it will, in practice, be impossible to prevent them crossing the outpost line. Special arrangements will be necessary for their collection as close behind the outpost line as possible. Defiles, such as bridges over a river, make suitable collecting stations.

3. No one is allowed to enter into conversation with persons presenting themselves at the outpost line except the commander of the nearest detached post, piquet or outpost company, who should confine his conversation to what is essential. Prisoners and deserters will be sent at once, under escort, to the authority appointed to interrogate them.

29. *Outpost patrols.*

1. The duty of observation as defined in Sec. 21 will be carried out principally by means of patrols or standing patrols (*see* para. 7 below).

2. Movements of patrols through the outpost line should be as few as is consistent with the performance of this duty. By day movements through the outpost line may disclose the dispositions of the outposts, while by night there is great danger of returning patrols being shot by their own side.

3. Whether mounted troops from the outpost line are patrolling to the front or not, every commander of an outpost company is responsible for his own protection against surprise. He will be informed by the outpost commander as to what mounted patrols have been sent out, and must then decide what further patrols, if any, are necessary for his own security, having due regard to the principle enunciated in para. 2 above. When mounted troops are in front it should seldom be necessary to send out infantry patrols by day unless the country is very thick or the weather misty. By night the majority of mounted troops will be withdrawn, a few standing patrols only being left out to watch either the enemy or distant points by which he might approach, and increased vigilance will then be necessary on the part of outpost companies.

In the absence of definite orders piquet commanders are responsible for taking such action as they deem necessary for the security of their piquets.

4. Outpost patrols, whether mounted or dismounted, may consist of from three to eight men under a non-commissioned officer. They should never be sent out in such regular sequence as will enable the enemy to foresee their movements. If a force halts more than one day in the same place the hours at which the patrols go out (except those before sunrise, see para. 6), and also their route, should be changed daily.

5. An outpost patrol, when going out, informs the nearest sentry of the direction it is taking and arranges some signal by which it may be recognised on its return. In the event of a patrol not returning when expected, another should be sent out, unless it is considered inadvisable to do so.

6. When mounted troops are available they should move out before it begins to get light and patrol all approaches within distant field artillery range of the outposts. When mounted troops are not available infantry patrols should be sent out at this time, but it will seldom be advisable for them to reconnoitre so far from the outpost position. These patrols must remain out till after daybreak.

7. A standing patrol is a patrol sent out to remain at some definite spot to watch either the enemy, a road by which he might advance or a locality where he could concentrate unseen. Standing patrols may be furnished by mounted troops or infantry. They are of the utmost value, especially at night, as they obviate constant movement. A standing patrol must be prepared to remain out for several hours. Its commander must arrange to send back an immediate report of any hostile movement observed, and, if the

enemy advances in strength, he must in default of other orders, retire on the piquet line before becoming seriously engaged.

30. *Battle outposts.*

If the enemy is close at hand and battle imminent, or if the battle ceases only at nightfall to be renewed next day, the whole of the troops must be in complete readiness for action. There may not even be room for outposts and the troops will have to bivouac in their battle positions, protected only by patrols and sentries. In such cases the most advanced troops take the place of the piquets. It will often occur in these circumstances that no orders can be issued by superior authority as to measures of protection, and in any case nothing can relieve the commanders of advanced troops of the responsibility of securing themselves from surprise, and, unless circumstances forbid, of keeping touch with the enemy.

PROTECTION FROM HOSTILE AIRCRAFT.

31. *Methods of dealing with hostile aircraft.*

1. The most decisive method of dealing with hostile aircraft at a height is to attack them with armed aeroplanes. Aerial fighting, however, requires space for manœuvre, and low-flying aircraft must be dealt with by fire from the ground.

2. Machine gun, Lewis gun, or concentrated rifle fire from the ground is effective against aircraft up to about 3,000 feet, and anti-aircraft gun fire up to 20,000 feet.

3. It is a principle of air defence that every commander, in addition to arranging for the protection of his command from surprise by hostile aircraft, is at all times responsible whether

on the move or at rest, for dealing with hostile aircraft flying over his command at an altitude not exceeding 3,000 feet. Concealment will, however, generally be the best protection from the air attack.

32. Considerations affecting the opening of fire.

1. The moral and material effect of Lewis gun fire against aircraft flying at altitudes not exceeding 3,000 feet is much greater than is apparent from the ground and limits the information which the hostile observer can obtain. Fire should, therefore be opened, against all low-flying hostile aircraft except in cases where it is essential to conceal from the enemy that a certain position or locality is occupied and the troops are so well hidden as to escape detection unless they open fire.

2. Indiscriminate fire against hostile aircraft is, however, very undesirable. Fire should, therefore, usually only be opened by those troops specially detailed for this duty and must be carefully controlled.

33. Visibility from the air.

1. Careful forethought and a knowledge of the extent to which objects on the ground can be distinguished from the air will enable unit commanders greatly to reduce the amount of information which can be acquired by hostile aircraft.

As an instance, the shadow cast by an object is more noticeable from the air than the object itself, and troops can often escape detection if they remain in shade while the

aircraft are overhead. Movement is easily distinguished by low-flying aeroplanes, but if troops lie face downwards and are not in regular lines they are difficult to observe even in the open.

2. Visibility from the air depends largely on atmospheric conditions, but the following table may be taken as a rough guide as to the detail which can be seen from various heights in fair weather.

At 500 feet troops can be recognized as hostile or friendly.

At 1,000 feet concentrations in trenches can be seen.

At 1,500 feet movements of small parties in the open can be observed.

At 5,000 feet movements of formed bodies on a road are visible.

CHAPTER III.

INFANTRY IN ATTACK.

34. *General principles.*

1. The general action of infantry in the attack is governed by certain principles which are applicable to both large and small units.

2. It is seldom either possible or desirable to attempt to overwhelm an enemy everywhere, it therefore follows that the commander of each body of troops, possessed of the power of manœuvre, must select some point or position in the enemy's defensive system against which he can direct his decisive attack.

The objective selected for the decisive attack should be struck unexpectedly and in the greatest possible strength.

To attain this result the importance of the following principles should be fully realized:—

- i. The principle of reconnaissance. (To obtain information by observation and by fighting.)
- ii. The principle of surprise. (Generally obtained by rapidity of manœuvre and secrecy as to the intention or as to the point of attack.)
- iii. The principle of economy of force.
- iv. The principle of co-operation.
- v. The principle of fire and movement.
- vi. The principle of exploitation of success.

3. The attack is divided into three principal phases:—

- i. The initial phase of reconnaissance, followed by relentless pressure on the enemy when he has been located, in order to discover the weak portions of his defence.
- ii. Penetration into the enemy's defences.
- iii. Exploitation of the success gained, and pursuit.

The principles of surprise, economy of force, co-operation, fire and movement, must always be kept in mind and applied to the fullest extent in all three phases.

4. Each phase of the attack will normally require three separate bodies of troops for its execution, which will be called respectively:—

- i. Forward body.
- ii. Supports.
- iii. Reserves.

The forward body will seek out for, and when located, attack the enemy along the whole front of the sector allotted to it and by relentless pressure, will wear down the enemy's resistance in order to discover the weak portions of the defence.

The supports will move up behind the forward body in such formations as will enable them to retain their power of manœuvre. They will, on the initiative of the commander of the whole, penetrate the weak portions of the defence and forthwith attack the flanks and rear of those portions of the defence which are holding up the attack. Orders for the actual execution of the attack by the supports are issued by their own immediate commander.

The third body, retained as a reserve by the commander of the battalion or larger formation will, on his orders, exploit the success when the objective has been gained and carry out pursuit. The reserve will also be available to meet the unexpected events which occur in every battle.

35. *Considerations on the tactics of the attack.*

1. The aim of infantry in attack should always be to get to close quarters as quickly as possible.

The governing principle is to carry out the assault with the minimum force necessary to capture the objective, whilst keeping in hand the maximum force ready to deal the decisive blow, exploit success, or counteract failure. By these means only is the commander able to keep control of the course of the action, since troops once committed to the assault cannot be diverted to other than their allotted tasks.

2. The tasks allotted to infantry in the attack are :—

- i. To gain a definite objective.
- ii. To maintain the ground won.
- iii. To prepare for a further advance.

3. Every commander before he decides on his plan of attack and issues his orders will take the following steps :—

- i. Study all available information about the enemy and his positions.
- ii. When time permits, send forward scouts and patrols to reconnoitre in order to discover the location of the enemy and the most covered lines of approach.
- iii. When possible carry out a personal reconnaissance of the ground over which his troops are to advance, noting the tactical features and best lines

of approach. In this reconnaissance he will arrange, when possible, for his subordinate commanders and liaison officers from other arms or formations to accompany him. He will point out to them the objectives and frontages and explain the dispositions and intended action of the other arms.

4. The degree of resistance which the enemy may be expected to offer will determine how the attack is planned.

Resistance may be of two kinds :—

- i. Unorganized or hastily prepared resistance as in an encounter battle.
- ii. Organized resistance necessitating a deliberate attack.

5. Unorganized or hastily prepared resistance will be met with :—

- i. When the enemy has not had time to prepare an artificial system of defence ; in which case he will probably be defending his ground in a series of tactical points or localities, with troops hastily brought into action, distributed in depth.
- ii. When the organized resistance has broken down. In this case the enemy should have had no time to plan or organize his further defence, and will resort to similar methods as in (i). He will depend on parties of his troops dispersed over the ground in the form of scattered machine gun and rifle posts acting on the initiative of local commanders.

In either case this form of resistance must not hold up the advance. It must be overcome by the determination of

company and platoon commanders acting on their own initiative within their own spheres of action, and relying mainly on their own resources for fire to cover their forward movements.

6. Organized resistance will be encountered when the enemy has had time to prepare an artificial system of defence, consisting of elaborate field works, wire entanglements, trenches, dug-outs, &c. Organized resistance will require an organized attack—a general plan of movement for a number of units of all arms in co-operation—and pre-arranged covering fire (artillery barrages, mortars, machine guns).

7. In the following paragraphs the tactics to be employed by infantry in the attack are considered chiefly in relation to the encounter battle. The infantry attack, however, should be conducted on the same lines in both forms of battle. The chief point of difference lies in the necessary limitation, in the case of the deliberate attack, of the depth to which the attack can be carried on, and the difficulty of launching reserves in pursuit. This limitation is necessitated by such considerations as the necessity of consolidating the success gained by means of previously arranged protective artillery and machine gun fire, and also by the number of successive defensive systems to be attacked.

8. In modern war, unless a decision is quickly obtained in the opening weeks of the campaign, the opposing armies tend to become immobile, chiefly owing to the great power conferred on the defence by modern armaments. The armies will then be distributed in great depth, and the attackers are faced with the necessity of breaking through not one position only, but a series of positions extending back to a depth of several miles.

In such cases one of the chief problems which a commander will have to solve is the depth and width of each successive portion of the defensive system to be attacked, and what proportion of his force he will employ on each of the objectives. The guiding principle to be kept in mind is that only sufficient troops should be detailed for the capture of each successive objective, as is consistent with the principle that the attack should be carried out in sufficient strength to enable the objective to be taken in the shortest possible time. Definite bodies of troops must be told off to definite objectives. Other troops following up in rear, who have been detailed for the capture of the next objective, must not be thrown into the fight until it is clear that fatigue or disorganization is beginning to check the momentum of the original attackers.

9. Objectives for a battalion must be fixed at the furthest limit to which it is likely to maintain the vigour of its attack, according to the conditions of ground and estimated resistance.

10. The normal rôles of the forward body, supports and reserves in the attack are as follows :—

- i. The forward body will be ordered to seize an objective defined beforehand, either on a map or on the ground. It is the duty of the units of this body to press forward to the objective irrespective of what is happening to adjoining units, so long as they see that their supports are close at hand, and thus protecting their flanks.

The various portions of the forward body will on occasions be able to afford each other mutual support by fire, and all commanders must be on the alert to assist units on their flanks in this manner when the situation requires it. Mutual

support amongst the leading infantry will, as a rule, however, be more automatic than deliberately arranged, and in no case must its absence be allowed to induce hesitation in the advance. The paramount duty of all leaders in the firing line is to get their troops forward, and if every leader is imbued with the determination to close with the enemy, he will be unconsciously assisting his neighbour also, for as a rule, the best method of supporting a neighbouring unit is to advance.

When, however, they are held up by the enemy's organized fire at close ranges they must keep him pinned to his ground and absorb his attention by maintaining a vigorous fire and working their way closer when opportunity offers.

Any slackening of pressure by these forward bodies will result, in the defenders being able to turn their attention to the flanking attacks which are being directed against them.

- ii. The supports will move close at hand. Their normal purpose is to assist the forward body to gain the objective by applying extra pressure at the right moment and at the right place. This can only be done if supports retain their power of manœuvre.

If the fire of the enemy is holding up the forward body, it will be the duty of the supports to turn the flank of, and enfilade, that portion of the enemy's defences whose garrison is opposing the forward body. To achieve this supports may have to quit their direct line of advance and follow in the wake of a neighbouring unit, which is able to advance.

They will pass through the gap thus made and advance against the exposed flank of the enemy, against which they will deliver an immediate blow. As soon as this manoeuvre has had the desired effect both forward and supporting troops will reorganize and continue their advance until the objective has been gained. Steps should then be taken to prepare the ground thus won for defence against possible counter-attack by the enemy.

Patrols should be sent out to keep in touch with the enemy and to reconnoitre the ground with a view to further advance. Troops should be reorganized in depth as soon as possible, and only the minimum of troops necessary for its defence should be kept in the forward line gained so as to avoid undue casualties.

- iii. The reserves are the means by which the battalion or higher commander exploits success or retrieves failure. When the objective has been gained he will launch the reserve in pursuit. In such circumstances full advantage must be taken of the disorganized state of the enemy and no opportunity of exploiting the enemy's local reverse must be lost. The normal rôle of the reserve therefore will be to exploit the success and carry on the pursuit until such time as other infantry or troops of the more mobile arms such as cavalry or tanks have caught up and passed through them. In this way a relentless pressure will be maintained on the yielding enemy. If the attacking troops fail to gain their objective, the commander will use his reserve to relieve exhausted troops and to deal with counter-attacks.

11. It must be constantly borne in mind that pressure should be brought to bear on the enemy by supporting troops in places where the attack is progressing, rather than where it is held up, never by the mere reinforcement or thickening up of a line of troops who have been unable to advance.

12. The relative strength necessary for the forward body, supports, and reserve will depend largely on the ground, the extent of the enemy's resistance, and on the amount of support available from artillery, tanks, and other arms.

13. Forward bodies of infantry are responsible for clearing all enemy defence posts within their frontage up to their allotted objectives. It is dangerous to the general success of the attack to pass on through any gaps that may exist, and leave these posts undestroyed. It is the rôle of the remainder of the attacking unit to push on through the gaps made, leaving the capture and clearing up of the posts to those portions of the attacking unit which have been detailed for this purpose.

14. When attacking an enemy distributed in depth, it is of vital importance to ensure that the momentum of the attack is not lost by the delay caused by the clearing up of small posts in the enemy's defences which are still holding out, and by the necessary reorganization of the companies (or platoons) which have carried out the assault. Therefore the commander of the battalion (or company) must be ready to push part or the whole of his supports through any gap made by another of his own forward companies (or platoons) to replace the company (or platoon) which is engaged in clearing up. The latter body will then become the supporting unit for the company (or platoon) which has pushed on, and will continue the advance as soon as it has been reorganized.

It is important, however, to preserve the tactical unity of each battalion, company, or platoon. Forward platoons who have succeeded in advancing must not move forward to such a distance that they lose touch with their supports.

15. When a weak portion of the enemy's defences has been found, and the infantry have succeeded in breaking through at that point, troops on the flanks of the point of penetration must endeavour at once to widen the breach made in the enemy's position and to confirm the advantage gained. It is of the greatest importance that the breach should be widened in proportion to the depth of the penetration into the enemy's position. Continued pressure in one direction without a corresponding extension of base will result in lack of manœuvre space and an increasing difficulty of communications.

16. In the encounter attack, when the enemy's main line of resistance has been broken and his forces in these positions have been defeated, it is essential that the advance should be continued with rapidity, and that every advantage should be taken of the enemy's disorganization. Units, on gaining their objectives, must be prepared to resume the offensive at the earliest possible moment, and every commander must be ready to push forward in order to exploit success to the utmost limit. Although definite objectives may have been allotted to battalions in the original orders for the attack, nothing should be allowed to hamper the initiative and freedom of action of their commanders in pushing forward beyond such objectives in those circumstances when the situation obviously demands it, and when their men are still capable of further action.

17. When troops have reached their final objective, infantry must reorganize and consolidate on the lines laid down in

Chapter IV. Every commander must safeguard his immediate front by seizing any tactical features which are sufficiently close to the line of observation to be of assistance to the enemy in covering a counter-attack or in interfering with any further advance. Patrols, with Lewis guns, should always be sent out at once in front of the line of observation to keep off hostile patrols, and, during the hours of darkness, to give warning of any enemy movements in the vicinity. Directly the objective has been gained and consolidated, every effort should be made to relieve the troops who have borne the brunt of the attack, and to replace them with troops who have been less heavily engaged. After an attack, in some cases it may be found that there are more troops on the ground than are required for the defence of the position. Such troops should be withdrawn from the forward posts and distributed in depth in rear of the position. The troops thus withdrawn can then be employed for patrolling, carrying parties, replenishment of ammunition, &c. It must, however, be borne in mind that the movement of troops during a period of consolidation is often much restricted by the action of the enemy. It is therefore important, whenever practicable, not to employ more men for the capture of a position than are required to hold it. It may be impossible to make any withdrawals before nightfall, and a large number of men may, therefore, be exposed to enemy artillery fire to no purpose.

18. The successful application of the two principles of co-operation and exploitation of success depends largely on the accurate knowledge of the situation which the superior commander is able to gain from all parts of the battlefield throughout the attack. Without such knowledge he will be unable to influence the course of the battle to the best

advantage by the timely use of his reserves and by the requisite control of the other arms.

Reports should be made out on previously prepared message cards and will include :—

- i. Exact position at the time of report.
- ii. Progress made.
- iii. The degree of the enemy's resistance.
- iv. Movements of the enemy.
- v. The future plans of the officer making the report and how he intends to carry them out.

36. *The battalion in attack.*

Preliminary measures.

1. The powers of personal control of a battalion commander upon the field of battle are limited, and success will depend, in a great measure, on the clearness of the orders which commit his leading companies to the attack. He should be guided throughout the action by the essential principles laid down in Sec. 34.

It is of importance that the battalion should not be hurried into action without good reason, but that time should be taken for reconnaissance of the ground, for the issue of orders, and for instructions to be given by company and platoon commanders to their subordinate leaders and to the men.

Many of the following paragraphs dealing with the action of the battalion are also applicable to the action of the company and the platoon in the attack.

2. When receiving his orders the battalion commander should endeavour to see that he is supplied with any details known to the authority giving him his orders, regarding the

general situation, and in particular that of the enemy and of the troops on his flanks or in front of him. He must obtain a clear understanding of his objective, the limits of his frontage, and the extent of the help which he will receive from the other arms.

3. He will endeavour to obtain information on the following points, which are of the utmost importance to the success of his plan of action :—

- i. The extent of the enemy's position.
- ii. The enemy's defensive dispositions.
- iii. The weak points tactically in the enemy's position.
- iv. The location of the enemy's machine guns and defence posts.
- v. The position of wire and other obstacles.
- vi. The best positions for his companies to form up on.
- vii. The most covered lines of approach.
- viii. The best line of attack combining cover and at the same time facilitating the support of the other arms.
- x. The best positions for his headquarters during each stage of the attack.
- ix. The most covered line of advance for his support and reserve companies.

4. He will then issue his orders for the attack. These will include :—

- i. Information regarding the enemy, his dispositions and the presence of wire and other obstacles.
- ii. Information as to the position and intended action of troops on the flanks and in front if the battalion is to pass through other troops.

- iii. The allotment of tasks and frontages to his companies and machine gun platoon (if the latter is not brigaded).
 - iv. The assembly and forming-up positions for the companies.
 - v. Compass bearings for the advance.
 - vi. The action of the other arms in immediate support.
 - vii. Signalling arrangements.
 - viii. The time at which the attack will begin (usually referred to as the zero hour).
 - ix. Arrangements for the synchronization of watches.
 - x. The intended location of his headquarters before, during, and after the attack, and the points to which reports will be sent.
 - xi. Notification of the medical arrangements.
 - xii. Collection of stragglers.
 - xiii. The escort of prisoners and where to send them.
 - xiv. Ammunition supply during the attack.
 - xv. Equipment to be worn.
 - xvi. The surplus officers and men who will remain behind to replace casualties when the engagement is over.
 - xvii. Orders to the quartermaster regarding the bringing up of rations.
5. The original tasks of the companies will be allotted in accordance with Sec. 35, 1.
6. The forward companies only will be allotted definite frontages, the battalion frontage being divided between them if more than one company is detailed to form the forward body. This division will be based, not on the extent of the frontage, but on the difficulty of the task, *i.e.*, the strength of the enemy's position on the respective frontages, and the nature of the ground.

7. In the case where the enemy's dispositions are known to some extent and considerable resistance is anticipated in the earlier stages of the attack the battalion will normally be distributed with two companies forward, one company in support and one in reserve. Such a distribution will ensure that the attack of the leading infantry is not held up by outlying machine gun posts and that when the company in support is committed to the attack it will deliver its decisive blow against the main resistance and not during the preliminary stages of the attack.

8. Where the enemy's dispositions and the likelihood of early resistance are doubtful, one company only might be forward and two retained for support. Thus the main strength of the battalion will not be committed to any definite rôle before it is needed and the situation of the enemy discovered.

9. The assembly positions for each company should be chosen with a view to their being under cover and where possible, facilities should be afforded for the issue of food and hot drink, the distribution of ammunition, the filling of water bottles.

In an encounter attack, while the battalion commander is carrying out his reconnaissance with the company commanders the companies should be moved to any convenient assembly position where they can remain under cover until they are ordered to advance.

10. The forming-up positions should be under cover if possible. Troops should be formed up in these positions, prior to the attack, close to and parallel to the starting line, which should be chosen in such a manner as to ensure that correct direction is obtained at the start of the attack.

11. Compass bearings will be given for the general line of advance of the battalion and that of the forward companies.

12. The means of communication will include visual signalling, telephone, wireless, runners and lights at night. Flickering lamps at night, facing towards the rear, are valuable to guides, runners, and ration parties.

13. Where the choice of the time at which the attack will begin rests with the battalion commander, he must consider the importance of obtaining surprise by rapidity of action, but he should endeavour to allow his company commanders sufficient time to reconnoitre the ground and issue their orders.

14. Synchronization of watches will be obtained by the signal officer sending round reliable watches to each company.

15. The choice of successive positions for battalion headquarters should be governed by the conditions laid down in Sec. 2. Likely positions for headquarters during and after the attack should be decided upon by observation or from the map. If these are found to be unsuitable after the attack has begun, runners should be left at the position originally selected in order to receive and pass on messages.

16. The medical arrangements should be made in consultation with the battalion medical officer. The position of aid posts and of the advanced dressing stations should be notified. The slightly wounded should continue to advance until the objective is gained. It should be pointed out that such action on their part will have an inspiring effect on their comrades. The more seriously wounded must endeavour to hand over their ammunition to those near them.

17. Stragglers' posts should be placed at suitable positions on the routes leading back from the battle line. It will be the duty of the regimental police to collect stragglers and send them forward again to battalion headquarters.

18. Escorts for prisoners should not exceed 10 per cent. of the number of prisoners in each batch. When possible the regimental police who have brought stragglers forward to battalion headquarters should take back batches of prisoners to brigade headquarters.

19. The route and points to which it is intended that ammunition will be brought up during the attack should be notified to all subordinate commanders. The ammunition should be brought forward by bounds as the attack progresses. It may sometimes be possible to arrange for ammunition to be brought up by tanks or dropped by aeroplanes.

20. The equipment to be worn will depend on the local and the tactical conditions.

21. A surplus of all ranks will be left behind and will constitute the *cadre* for re-forming the battalion. The officers and N.C.Os. selected must therefore be experienced, whilst preference should be given to those needing a rest on account of previous fighting. They must be informed where and to whom they must report, and arrangements must be made for their accommodation and rations.

22. When time permits, the battalion commander should arrange a conference with the commanders of the other arms in immediate support of his force, when he will explain his intentions and dispositions.

The conduct of the attack.

23. The success of the battalion's attack will largely depend on its commander's plan of action as contained in his orders.

During the attack he will influence the fortunes of the fight by the timely use of his support and reserve companies.

24. The attack of the battalion will be carried out according to the principles and considerations laid down in Secs. 34 and 35.

25. The forward companies will advance direct on the battalion objective in accordance with Sec. 35, 10, i, in order to reconnoitre and pin down the enemy opposed to them. They must endeavour to gain the objective by their own resources if possible.

26. When the forward companies are unable to make further headway the battalion commander, whose normal position should be with his supports, must endeavour to judge by reports and observation whether the time has arrived for him to intervene in the fight.

If he considers that the attacking companies have succeeded in pinning the enemy down on their immediate front, but are unable to make further headway with the resources at their disposal, he will direct the commander of the supporting company to turn the flank of and deliver a decisive attack against that section of the enemy's defences which is holding up the attack. He will indicate the flank to be attacked and the general direction, but leave the method of execution to the company commander. Having committed his support company to this definite role, the battalion commander will assume control of his reserve company.

When the enemy's resistance has been overthrown, the forward and support companies will reorganize and continue the advance on the objective. If either the forward or support companies are unduly exhausted and the battalion commander judges that further resistance is likely to

be encountered before the objective is reached, he may find it best to replace one of them with the reserve company, exchanging rôles, in order to maintain the momentum of the attack. In such a case the company to be replaced must hold on to the ground already gained while the reserve company is moving forward to replace it.

27. The distance of the supporting units from the forward companies should be such as to avoid the fire aimed at the forward company whilst being near enough to take advantage of any breach made in the enemy's defences. The distance will, therefore, depend on the progress of the forward company and the amount of cover obtainable on the line of advance. A normal distance would be about 400 yards. The distance, however, should be sufficient, if possible, to enable it to manoeuvre under cover, instead of under the enemy's fire. It should move by bounds preceded by ground scouts. Each bound should be made to a tactical point from which it can move to fulfil its proper rôle in the attack. As soon as a gap is made by one of the forward companies, the supporting units should be pushed forward as quickly as possible through it.

28. The distance of the reserve company from the support company will normally be about 400 yards. The distance must be such as to prevent it getting involved in the fight and so be able to fulfil its proper rôle. During the later stages of the attack it should move forward by bounds, as near as possible to the troops in front. It will thus be able to pass through directly the objective has been gained and carry out pursuit, or if a considerable counter-attack develops, it will be in a better position to deal with it.

29. Directly the objective has been gained, the battalion commander will launch his reserve in pursuit as laid down in

Sec. 35, 10 (iii). Where neither tanks, cavalry, nor other battalions are available to pass through and carry on the pursuit the battalion commander must instruct the commander of the reserve company, as to the limits to which he may carry the pursuit.

30. The battalion commander must seize the opportunity to push forward beyond his original objective if the enemy appear demoralized and he sees the chance of gaining further objectives without serious opposition.

31. As soon as the final objective has been gained, the battalion will consolidate in depth according to the principles laid down in Sec. 44. The forward companies will consolidate a position on or slightly in advance of the objective, whichever is most favourable for the defence and as a jumping off position for a fresh advance. The support company will take up a position in rear, preferably, on a flank, in readiness to carry out a counter-attack.

The reserve company, if it has not been employed in the pursuit, will take up a position in rear of the objective which it will consolidate as a final position of resistance for the battalion.

32. During the progress of the attack and after consolidation the battalion commander will send back reports on the lines laid down in Sec. 35, 18.

33. As reports are received from his subordinate commanders, he must decide as to which reports concern him alone and those which concern his own superior or the commanders of the other arms in immediate support of him. He must at once send back the information contained in the latter.

34. The battalion commander will ensure that measures are taken by the commanders of all companies to keep him

informed, throughout the attack, of the situation and their progress.

35. The battalion commander will keep in touch with the battalion on his flank by sending out patrols as the need for information and communication arises.

36. The battalion commander will keep in touch with the artillery and other arms by the methods laid down in Chapter VI. He must above all keep them informed of the position and progress of his forward companies and the location of all enemy defence posts, on which he wants fire to be concentrated.

37. The battalion commander should endeavour, after the attack, to relieve the companies who have borne its brunt as early as possible. If the forward companies have, as is usually the case, been the most severely engaged they should be relieved by the support and reserve companies.

37. The company in attack.

Preliminary measures.

1. The company commander will base his orders on those received from the battalion commander. He should allot tasks and frontages to his platoons and give orders as to their distribution. He must state in his orders where he will be himself during the attack.

2. The distribution of a company will normally be two platoons forward and two in support. If the company is carrying out a minor attack independently, one of the two platoons normally in support will act as a reserve. Where the frontage allotted to the company is unusually broad and considerable resistance is anticipated early in the attack, three platoons may be forward with one in support. During the

early stages of the encounter battle where the enemy's dispositions are doubtful, and strong resistance is unlikely, the company may be distributed with one platoon forward and three in support.

3. Where the frontage of a company is above the normal, the platoons should not endeavour to cover the whole front, but gaps should be left between the attacking platoons in order to cover the extra breadth.

4. Compass bearings will be given for the general line of advance of the company and also for the forward platoons.

Conduct of the attack.

5. The attack of the company will be carried out in accordance with the essential principles and tactical considerations laid down in Secs. 34 and 35.

6. The company commander will ensure that he is kept informed throughout the attack of the situation and of the progress of his platoons.

He is also responsible that all essential information on these points is passed back to the commander of the battalion.

The company commander will also keep in touch with the companies on his flanks and will send out patrols for this purpose if necessary.

7. The company commander must use every opportunity afforded by the fire or smoke provided by other units or arms to get forward or round the enemy's flanks.

8. The forward platoons of the leading companies will advance direct on the battalion objective as laid down in Sec. 35. It is their rôle to reconnoitre for and pin down the enemy opposed to them. They must endeavour to gain the objective by their own resources if possible.

9. If the forward platoons are unable to advance, the company commander will make use of his supporting platoons to push through where the resistance is weakest, and thus turn the flank or flanks of those portions of the enemy which are holding up the advance. Directly the enemy's resistance has been overthrown the company will reorganize and resume their advance on the objective. The company commander may find it advisable during the reorganization to replace one or more of his forward platoons from his supporting platoons in order to maintain the vigour of the attack.

10. The rear platoons of a company must never continue their advance until all centres of resistance within the company frontage have been destroyed.

11. Directly the objective has been gained the position will be consolidated and patrols sent out on the lines laid down in Sec. 35, 15.

38. *The platoon in attack.*

1. The platoon is the smallest unit which can be divided into independent bodies each capable of fire and movement. It is, therefore, the smallest unit which can carry out the two essential parts of the infantry attack. It is able to pin the enemy down and also to manœuvre round his flanks. The platoon is, therefore, the tactical unit on which all infantry tactics are built up.

2. The platoon commander will base his orders on those received from his company commander. He will give orders as to the distribution of his sections, their tasks and in what formation the platoon will move. He will point out to his section commanders any suitable landmarks by which they

can keep their direction, and will give them all information as to the enemy's dispositions, entrenchments and obstacles.

3. The platoon will normally be distributed for the attack in either square or diamond formation.

i. If in square formation, two sections will normally be forward and the remaining two sections in support. The two forward sections should be so distributed as to cover the platoon frontage. The two supporting sections should move in a more concentrated formation, in readiness for instant manœuvre.

ii. If in diamond formation, the leading section will reconnoitre for and pin down the enemy, whilst the three rear sections will be held ready to manœuvre so as to carry out the decisive attack at the point in the enemy's defence which offers the best prospect of success.

4. Except when following a larrage the platoon commander should send ground scouts ahead, from the forward sections, to find the most covered line of advance and best fire positions and to guard against ambush. When checked, the scouts will remain in observation until the sections come up with them, when they will rejoin them. Before the platoon is deployed, it may be desirable to push scouts out to the flanks. They will rejoin directly the platoon has deployed, as the formation of the platoon will then itself ensure security from surprise.

The conduct of the attack.

5. To ensure success in an attack, every platoon, every section, and every man must know what its or his objective is.

In order to reach the objective, direction must be maintained during the advance. As soon, therefore, as he has received his orders the platoon commander should explain the situation to his subordinates and point out the line of advance.

6. The platoon commander should usually move with the forward section or sections during the preparatory phase of an attack. When these have been committed to an attack on a definite objective he will assume control of the supporting sections and move with them.

7. Infantry attacks consist of movement covered by fire, and as a general rule, all movement by forward sections under enemy fire should be covered by the fire of other sections. The supporting sections will often find opportunities for covering the advance of the forward sections from positions in rear or on the flanks.

8. When advancing under fire movement will be carried out by rushes. The length of rushes must depend upon the ground, the enemy's fire, and the physical condition of the troops. It is advisable to make a rush of some length across open ground in order to reach good cover behind which men can rest. If a platoon or section finds a long downward slope devoid of cover it is often best to make one rush to the bottom of the slope. *

If the hostile fire becomes so severe that section rushes are no longer possible, the advance must be continued by individual rushes, two or three or even single men from the advancing section moving forward at a time.

9. Under certain conditions of ground the fire from the two Lewis gun sections can effectively support the attack of the remainder of the platoon from positions in rear when

overhead fire can be utilized, *e.g.*, when the attack is down hill or across a valley.

The Lewis gun sections should be prepared to work in close co-operation with each other. By the skilful use of fire and movement they will often be able to silence a definitely located machine gun, which is checking the advance.

10. In order to find out the weak points in the enemy's defences and to afford opportunities for the supporting sections to manœuvre round the enemy's flanks the whole platoon must work in close co-operation. The effect of such action may afford an opportunity for either the forward or supporting sections, or both, to carry out the assault.

11. The platoon commander must watch the enemy's movements and report at once to the company commander and to neighbouring units if anything of importance is observed. He must, therefore, keep in close touch with platoons on his flanks.

After a successful assault he must get the men in his vicinity under control as quickly as possible.

12. The section commander will lead his section.

He must see that direction is maintained and that he does not mask the fire of neighbouring units.

He will deploy his section as soon as it comes under effective rifle or machine gun fire; the nature of the deployment will depend on the ground.

He will control and, if necessary, direct the fire of his section and of any leaderless men in his neighbourhood.

He must select and point out successive halting places during an advance and must see that the men place themselves in positions from which they can use their rifles effectively.

He must preserve a good fire discipline and prevent waste of ammunition. Ammunition from casualties will be collected.

He must assist neighbouring sections with his fire whenever he sees an opportunity.

He must keep in close touch with his platoon commander and with units on his flanks.

He will give the orders for fixing bayonets.

When his section is held up he must make every effort, by using all available cover, to gain ground with a view to seizing a favourable opportunity to assault.

Immediately after the assault he must at once regain control of his section in view of a possible counter-attack.

13. If at any time a soldier loses touch with his section commander, it is his duty to place himself under the orders of the nearest officer or N.C.O., irrespective of the company or battalion to which he may belong.

No man is permitted to leave his section in action to take wounded to the rear, or for any other purpose, without special orders. After an action any unwounded man who has become separated from his company must rejoin it with the least possible delay.

39. Special considerations on the attack in position warfare.

1. The general principles and system of attack as laid down in the preceding sections hold good equally for the attack in position warfare on a highly organized position.

Certain minor modifications of the methods only are necessitated by the special conditions.

2. The main differences are that on the one hand the enemy's defences will be artificially much stronger than in

an encounter battle and therefore the attack must be more carefully organized, whilst on the other hand his positions will be known. The increased strength of the defence should be countered by an increase of mechanical fire power, such as tanks and artillery. To increase the density of the infantry will only mean increasing the casualties without any compensating advantages.

Reconnaissance can only be carried out beforehand by observation from the air and from the ground, by air photographs and intelligence maps.

3. Infantry cannot be launched against unbroken lines of wire obstacles. Hence gaps must be made in the wire either by an artillery and mortar bombardment before the attack, or by tanks preceding the infantry in the attack. If a bombardment is used prior to the attack to cut gaps in the wire, it is the duty of the infantry to keep them open by patrols and constant Lewis and machine gun fire.

Where the opposing trenches are very close, arrangements must be made to withdraw the infantry to such a distance as to avoid danger from their own bombardment prior to the attack.

4. The position of assembly should be chosen so that it is under cover, and that the infantry can rest and have a hot meal there before moving to the forming-up position. To gain the benefit from this the distance from the assembly to the forming-up position should be short.

5. The move from the assembly to the forming-up position should be made by a covered approach or under cover of darkness. If open ground has to be crossed in daylight, the method of moving up a few men at a time should be used, if time permits, but if not, approach formations, laid

down in Sec. 6, should be used. Ample time should be allowed, if possible, for this move forward and guides should be furnished to lead platoons to their positions. When a covered approach is available platoons may pass in turn along the same approach at definite intervals, as a definite frontage is not needed during this phase. **The main object is concealment from the enemy.**

6. The forming-up positions should be under cover and as close to the enemy positions as possible, so that the infantry may be exposed to his fire for the minimum of time. If the zone of the enemy's protective barrage is known, the positions should be so chosen as to be clear of it. The forming-up position of each unit should be directly behind their line of advance so that a true direction may be obtained at the start of the attack. When a creeping barrage is employed, the positions should be parallel to the objective.

The forming-up positions should be marked out by tapes fastened to the ground or by natural features, such as ditches or paths. When the forming-up is to be done in darkness tapes are essential.

7. When there is not time to prepare a forming-up position, the attacking troops should be brought up during the night, and launched to the attack about dawn.

8. In choosing the line of attack more weight must be attached to considerations which facilitate the action of the other arms, and less to the possibility of cover, than in an encounter attack.

9. Infantry cannot, with its own arms, develop sufficient fire power to drive an enemy out of highly-organized positions. Hence their advance must be covered by an artillery barrage and by tanks when available.

When following a barrage, the infantry must keep as close to it as possible. The danger incurred by a shell falling short is negligible when compared with that involved by failure to gain protection from the covering artillery fire.

It is essential that the infantry should assault each hostile position immediately the artillery have lifted off it and before the enemy have had time to man their defences.

When tanks are used, the forward sections must keep close to them, in a similar manner.

10. In these circumstances co-operation with the other arms becomes of primary importance, and every possible means must be used to convey information to the artillery and tanks which are in support of them. Above all, it is essential that information is sent to the supporting artillery immediately the final objective is gained.

11. Where there is a likelihood of the enemy putting down a protective barrage in front of his positions, the battalion should be closed up, with only a few yards between the various platoons and companies. They should pass through the barrage danger zone at a rush, opening out again to their proper distances on reaching the forward positions of the enemy.

12. On occasions when it is impossible to assault the whole line of a trench, the sections of the trench against which no attack is directed must be kept under fire. It may sometimes be possible for the artillery to use smoke for this purpose.

13. The platoons should normally be distributed, in an attack against a highly-organized position, with the rifle sections forward and the Lewis gun sections in support. It will be the duty of the latter to protect the flanks of the rifle sections and to deal with any stray enemy machine

gunners or riflemen who emerge from cover, after the forward sections have passed on. •

14. If the forward sections fall behind the barrage, they must fight their way forward by the use of their own weapons, backed up by machine guns and mobile mortars.

15. Where the enemy's positions are very intricate and there are a number of large and deep dug-outs, the forward company commanders must, if following a creeping barrage, detail one of their support platoons to clear these dug-outs of the enemy before moving on. This is necessary because the forward platoons must on no account fall behind the barrage, as might happen if they waited to clear dug-outs.

16. Communication trenches should be cleared by sections moving above ground on either side, and shooting down into them. It is fatal to the momentum of the attack, for infantry to attempt to fight their way through trenches.

Raids.

17. A raid is an attack with a limited and temporary objective, in which the attacking party returns to its own positions after achieving its ends.

It may be used in position warfare to harass and thus weaken the moral of the enemy; to take prisoners for intelligence purposes; or to destroy particular hostile defences. Its greatest value lies in finding out the identity of the opposing units and gaining information about the enemy's intentions.

18. It is a main principle of a raid that it should cause the enemy greater losses than the raiding party suffers.

The operation, therefore, must take the enemy by surprise and must be so timed that the troops will be back in their own trenches before the enemy has recovered from his surprise. Raids must be planned in great detail and when out

of the line the raiding parties should, if possible, rehearse the operation on a facsimile of that portion of the enemy's trenches which it is intended to raid.

19. In a raid definite geographical objectives or specific tasks should usually be allotted to each section. The raid should normally be carried out by the rifle sections, acting as forward sections. The Lewis gun sections, acting as support sections, should cover the attack and withdrawal of the raiding sections with fire and, in a daylight raid, with smoke. If the opposing positions are very close, they may carry out this *role* from points within their own positions; otherwise they should move out as near the enemy positions as possible.

20. If the main purpose of a raid is to secure information by the capture and identification of enemy soldiers, this object may often be achieved more easily and with less loss by the use of fighting patrols.

CHAPTER IV. INFANTRY IN DEFENCE.

40. *Definition of the term defence.*

The term defence is used here in its broadest sense, and includes :—

- i. Active defence, in which the ultimate object in view is to create and seize a favourable opportunity for a decisive offensive.
- ii. Passive defence, in which the object may be to beat off an attack without hope of being able to turn the tables on the enemy by assuming the offensive at some stage of the fight, as, for example, in the defence of a fortified post weakly garrisoned.
- iii. The delaying action by means of manœuvre, in which efforts are directed to gaining time without risking defeat, as in the conduct of rear guards, or when awaiting the arrival of reinforcements.

THE ACTIVE DEFENCE.

41. *General principles.*

1. Though victory can be won only as a result of offensive action, a defensive attitude may sometimes be temporarily necessary or even advantageous. An active defence, which is inspired with the offensive spirit and imposes continuous pressure on the enemy, will wear down the hostile resistance, and prepare the way for the ultimate defeat of the enemy.

2. A defensive attitude may be imposed upon a commander by the necessity of detaching a portion of his force for offensive action elsewhere. In such a case there will generally have been time to organize a system of resistance, and the troops will have been able to take up their allotted positions without interference from the enemy. On the other hand, a commander may be surprised or lose the initiative unexpectedly and be compelled to accept battle after little or no preparation on whatever ground is to hand. In this case it is of the utmost importance that the decisive attack of the enemy should be delayed as long as possible to allow time for defensive preparation to be made. Under these circumstances infantry will act on the principles laid down for retirements (*see* Sec. 53).

3. In a newly-captured position, the forward area should be held in comparatively greater force, so that effective resistance may be opposed to an improvised counter-attack. Later, after the enemy has had time to reorganize his artillery and mortars, the distribution of the troops must be modified so as to reduce the number of men exposed to heavy bombardment.

The troops will be divided into two main portions, one, known as the general reserve, to be held in readiness for the initiation of a general offensive when a favourable opportunity has been created, the other to create the desired opportunity by temporarily taking up a defensive position, and then to co-operate actively with the general reserve in its attack on the enemy.

4. In forming his plan of battle the commander has to determine the relative strength of these two parts, the time and place for the assumption of the offensive by the general reserve, and the general distribution, and methods of action

of the remainder of the force. These will all vary with the commander's intentions, and will largely depend upon the nature of the ground. On occasion his plan may be to strike the enemy directly the latter has committed his forces to the attack, and thus lost his power of manœuvre. In such a case it is not likely that a severe strain will be imposed upon the part of the force intended to create the opportunity for attack, which may therefore be comparatively weak or may even attain its object by manœuvring rather than by continuing to hold a definite position. At other times the commander may consider that his best chance of victory lies in allowing the enemy to exhaust his strength in endeavouring to capture a strong position before the offensive is assumed. In these circumstances it is necessary that both the position and the force allotted to hold it should be strong enough for the object in view.

5. Infantry allotted to the defence of a defence post or defended locality are responsible for holding it at all costs and for inflicting the greatest possible loss on the enemy.

The fact that any post or locality in their neighbourhood is lost must on no account be considered a reason for them to withdraw in order to conform with a consequent readjustment of the line. Garrisons which succeed in maintaining their positions in spite of hostile successes on their flanks are of the utmost assistance in dislocating an enemy's organization, in breaking up his attack, and in assisting counter-attacks.

6. Troops detailed for the defence of a position have other duties to perform as follows:—

- i. Local counter-attacks.
- ii. The formation of defensive flanks.
- iii. The reinforcement of the stationary defence by
manning certain pre-arranged fire positions.

A counter-attack may be either an immediate one or undertaken after deliberate preparation and with the assistance of the other arms. If an immediate counter-attack is to be successful it must be delivered with rapidity and precision by troops already on the spot and specially detailed for an emergency of this nature. It should be undertaken when the enemy attack has only been partially successful and should be directed against one of his exposed flanks.

7. In cases where the enemy has succeeded in penetrating into the defensive system it will usually be essential to strengthen the flanks of any breach which the enemy has made and to prevent him from widening the breach until a deliberate counter-offensive can be delivered. In such cases a defensive flank should be formed. In exceptional cases it may be necessary to reinforce posts or localities or to replace casualties, but, as a general rule, troops which are detailed for counter-attack duty should not be used for any other purpose, and garrisons of localities should understand that assistance will be given to them, if and when required, in the form of a counter-attack.

8. Infantry detailed for deliberate counter-attack or for a main counter-offensive will act in accordance with the principles laid down for infantry in attack.

42. The choice of a defensive position.

1. In selecting approximately the position to be defended, a commander must be guided by the consideration that the framework of the defence will be the artillery and machine guns. The position must therefore be regarded largely from this point of view.

The next step is to decide on the line to be held and on the extent of front to be occupied. The object must be to obtain

the maximum of fire effect on all ground over which the enemy can advance, with the minimum of exposure to his fire. An extensive field of fire from the position offers many advantages, but if the enemy is very superior in artillery a restricted field of fire combined with comparative security from his guns may give better results. It is difficult for attacking infantry to push home an assault against determined troops well protected from artillery fire even if the defenders have only a field of fire a few hundred yards in depth.

2. The extent of the front of the position must be proportionate to the object in view (*i.e.*, to the plan of battle) and to the force available.

If the frontage occupied in battle is so great as to reduce the force kept in hand for the ultimate initiation of the offensive much below half the total force available, the position may be considered too extended to be held with a view to decisive action.

On the other hand, too narrow a front may enable the enemy to develop early in the engagement strong flank attacks, which may make the position untenable before the time is ripe for the assumption of the offensive.

The flanks are always the weakest part of a position if they are open to attack, and an extension of front which, under other conditions, would be excessive, may be advisable if it enables one or both flanks to be posted strongly. If the flanks can be made sufficiently strong the enemy may be forced to attempt to drive his assault home against the front of the position. It is a great advantage if one flank, at least, can be posted so strongly as to compel the enemy to make his main efforts against the other, as this will usually enable the defender to foresee the probable direction of the enemy's main attack and to make his dispositions accordingly.

3. Behind the firing line it is important to have sufficient depth for manœuvre. There should be good cover for supports and local reserves, and the nature of the ground should permit of these being moved either to the front or to a flank, as may be required.

4. A position fulfilling all requirements can seldom, if ever, be found. It will always be necessary in selecting one to balance various advantages and disadvantages. But since, in active defence, the position is held only as a means of creating a favourable opportunity for eventual offensive, it is essential that the position should be chosen with a view to facilities for launching the attack. Unless there be favourable ground for this, the position cannot be considered a suitable one for the object in view.

43. Organization of a defensive position.

1. All defensive positions must be organized in depth. Distribution in depth ensures the necessary elasticity by means of which the resistance constantly increases and hardens as the attackers penetrate into the position.

The defensive system will be divided into :—

- i. An outpost zone.
- ii. A battle position.

The object of the garrison of the outpost zone will be to keep constant watch on the enemy by means of observation and patrols, to give warning of hostile attack, to defeat minor enterprises, and, in the event of a heavy attack, to absorb the first shock, and, as far as possible, to break up the enemy's organization before he reaches the main battle position. With this object the outpost zone must be organized in depth and should usually consist of :—

- i. An observation line of well concealed sentry posts, supported by a chain of small posts.
- ii. An outpost line of resistance, consisting of a series of defence posts affording each other mutual support.

2. The battle position will occupy the area in which the commander decides to fight out the battle and break the enemy's attack. It must therefore form the keystone of the whole defensive system and must also be organized in depth.

3. The defensive system should be divided into sectors, and a definite body of troops told off for the defence of each sector. The dividing lines between sectors should, as far as possible, be denoted by easily recognizable features, and should be carried from the most forward point of the outpost zone back to the rear of the main battle position, the formation which holds each sector being distributed in depth, and providing its own local reserves. Each infantry brigade sector will be sub-divided amongst the battalions of the brigade, but it will depend upon local conditions and upon questions of relief, whether a battalion sector will include both the outpost zone and the battle position. It is usually advisable that at the various points where two units, holding a position in depth, adjoin, there should be a post manned by representatives of both units, or that patrols from both units should meet at stated hours for the purpose of exchanging information.

4. The construction of a defensive system.

Preliminary steps.

- 1. Whether it is the intention of the commander to resume the offensive at an early date or whether it is likely that the defensive system will be occupied for a considerable period,

the principles on which the construction of all defences should be undertaken are the same. In the former case, time will probably not allow of linking up the various defended localities with trenches, and the construction of elaborate underground defences. It must be remembered, however, that it is the duty of all troops detailed for the defence of an area to continue to improve the defensive arrangements in their area until such time as the offensive is resumed.

2. All defensive systems should be planned from the outset in such a way that they can be easily adapted to the requirements of a prolonged defence. The ground must be thoroughly reconnoitred and should at the first be divided into series of tactical posts and defended localities. These posts should be self-supporting, but should be so sited that the garrisons mutually support each other by fire. The gaps between the posts must be covered by the fire of the garrison of the posts, and machine guns may also be sited to bring fire to bear from positions in rear or to the flanks. All possible means must be employed to improve the natural tactical value of such posts or localities by the construction of well-sited trenches and by obstacles designed to force the attacking enemy into areas which can be swept by artillery and machine gun fire.

3. Each post in the forward area of the outpost zone will normally be garrisoned by a section. Companies in support will usually be distributed in platoon posts. This distribution will admit of quicker and easier control by their commanders.

The relative positions of each section post will depend on the contours of the ground. Each post will form a self-contained centre of resistance, capable of all-round fire, the duty of whose garrison it will be to defend the area allotted to it, to the last man and the last round.

4. Immediately the infantry have occupied a tactical point and formed a defence post, they must construct fire positions. The first requirement is that the men should be able to use their weapons, the second, is concealment from the enemy, and the third, protection from his fire.

Natural features of the ground—such as ditches, banks or mounds—should first be utilized, whilst use can also be made of shell-holes or existing enemy trenches, provided these fit in with the tactical scheme of the defence. If such features do not exist or are unsuitable, slits or holes in the ground must be dug, to afford cover and from which the men can use their weapons.

5. Any roads, bridges or covered lines of approach which the enemy might use, should be blocked with wire or other obstacles. Low trip wires and obstacles should be placed round the posts so as to shepherd the attacking enemy into an area, where the oblique or enfilade fire of two sections can converge.

6. Cover should then be improved, the holes or slits connected up and short lengths of trench should be dug, from which all-round fire is possible. The interval between the men in each post should be at least five feet, otherwise one shell may destroy the whole section.

7. Early steps should be taken to clear the foreground, if necessary, to allow of an uninterrupted field of fire, if only for a short distance.

Ranges should also be taken at once to any prominent objects in the immediate neighbourhood. Further ranges to more distant objects can be taken later when range marks can also be put out, and range cards prepared.

8. As soon as the foregoing work has been completed the trench slits should be deepened to afford protection against shell fire. They should be excavated to a depth of five to six

feet. As men may have to use their rifles at short notice while this work is being carried out, great care must be taken that the excavated earth is not thrown up so high as to prevent this.

If a shell hole is being deepened, the side towards the enemy must be made perpendicular.

9. In all digging, care must be taken to cover up the newly-exposed earth. The upper sods should be cut and put aside for laying on top of the new earth. Grass, leaves or any foliage can also be used for this purpose.

10. As early as possible latrines and cooking places should be constructed at some covered spot away from the post.

11. In all newly-consolidated positions, movement should be avoided as far as possible during daylight. Rations, water and ammunition should be brought up as soon as darkness falls.

The deliberate construction of defences.

12. If it is necessary to remain on the defensive for a long period, the conditions become those of position warfare, and the defensive system which has been commenced on the foregoing lines must be improved, and strengthened by all possible means.

13. Steps will be taken to link up the defence posts and defended localities with communication trenches. Control will thus be made easier, reliefs will be facilitated by the use of these covered approaches, and the comfort of the troops will be greatly increased, while the opposing artillery will have greater difficulty in finding targets. It is above all important to assimilate the post to the surrounding communication trenches in order to conceal it, and deceive the enemy as to its true location.

Care should be taken when constructing communication trenches that they do not afford cover for an enemy attacking the posts. They should be made in such a way that fire can be brought to bear down that portion of the trench which leads into the post. Wire obstacles should be placed in readiness to block it.

Before the construction of a trench is begun, the ground must be thoroughly reconnoitred and the trench sited and marked by tapes.

14. The general position and extent of obstacles will depend upon the arrangements necessary for local counter-attacks, and for the eventual assumption of the offensive. In any case they must be placed under the effective fire of the defenders.

If wire is used it should, whenever possible, be concealed in hedges, woods, crops, long grass or depressions in the ground.

Obstacles should be so sited as to check the enemy at points where converging rifle, Lewis gun and machine gun fire can be brought to bear on his flank.

Intervals between the posts in the outpost zone should be protected by obstacles. Gaps should be left to allow of the free movement of patrols and counter-attacking troops.

15. When developing a highly organized defensive system care should be taken that existing posts or trenches are not included if they are badly sited, or unless they fit in with the general scheme of the defence. If their siting is incorrect they should be abandoned and filled in. Dummy trenches, when used, must be so sited that they are of no use to an attacking enemy.

16. The trace of a trench should always be irregular in order to reduce the results of hostile shelling, and also to

minimize the effects of enfilade fire. Traverses in the trench, which should be at least 15 feet thick, will also serve the same purpose.

Traverses should not be made in communication trenches as they make the movement of carrying parties difficult; the *trace* should, however, be made irregular. long straight lengths should always be avoided, except for the final portion where the communication trench joins a defence post.

17. The *section* of a fire trench should be constructed in such a way that it gives the soldier $4\frac{1}{2}$ feet of cover where he stands to fire. How much of this is provided by the actual trench dug in the ground and how much by the parapet of earth thrown up will depend on the site and nature of the ground; in dry ground the parapet should not normally be more than 18 inches high, but in wet soil the trench can only be excavated as far as the water level will allow. The parapet should be at least $4\frac{1}{2}$ feet thick, and the top of it must be so sloped that the firer can aim at and beyond the ground-level immediately in front of the parapet. Where traverses exist their parapets should be levelled to the same height as in the fire trenches. Communication trenches and the bottom of fire trenches, behind the fire-step, should afford 7 feet of cover whenever possible.

18. Trenches should be dug at a sufficient slope to enable them to stand without being revetted. In normal soil a slope of 3 feet deep to 1 foot broad is advisable. In sound chalk, however, a slope of 6 over 1 is possible. They should be dug to their full width from the outset if possible. Narrow and deep trenches are only advisable when the enemy is known to possess no heavy artillery or mortars.

19. All trenches must have a *berm* of fully $1\frac{1}{2}$ feet. If it is necessary to revet trenches, sandbags, hurdles, brushwood,

corrugated iron or expanded metal supported by long pickets anchored to the parapet or parapets may be used.

20. All fire trenches should have fire-steps made at the back of the trench, as well as in the front, so that the garrison may be enabled to fire to a flank or to the rear. Fire-steps should always be revetted first.

21. Unless there is a natural fall of the ground to carry off the water immediate attention should be paid to the drainage, and sloping channels should be dug to sump-pits made a short distance from the post. Where trench boards are available they should be laid as soon as possible, and sumps, at least 2 feet deep, should be dug under them in the floor of the trench.

45. Special considerations on the defence in position warfare.

1. The forward positions should be held more lightly than in a newly consolidated defence, so that the number of men exposed to an enemy bombardment will be reduced. The extra strength of the positions will counter-balance the reduction in numbers.

2. Concealment of the defences is not the first essential, as is the case in a newly-consolidated position where the enemy artillery requires time to locate the dispositions. The enemy's air and intelligence services are able eventually to locate most permanent defences, and therefore the first essential is protection against bombardment. This will be obtained by wide and deep trenches and strong dug-outs.

3. The avenues of communication should be extended and improved, so that troops may be kept under cover until they

are required to man their fire positions. All trenches should be named, those running laterally being called trenches and those from front to rear avenues.

4. In order to improve the cover, both from the weather and hostile shells, mined dug-outs or concrete blockhouses should be constructed. Deep dug-outs should not be constructed close to the enemy owing to the danger of delay in manning the fire positions if a surprise assault is made. Their garrisons must be constantly practised in manning their battle positions rapidly, both by day and night. In forward areas concrete blockhouses are of great value, as the garrison can quickly get to their fire positions. A sentry must always be posted outside dug-outs containing troops to give warning of an attack or of gas.

5. A complete system of signal communication should be arranged, and cables buried as soon as time and labour can be made available.

6. A minutely-organized defence scheme should be drawn up and its details must be frequently rehearsed, so that when the enemy attack comes every unit commander and man will know his exact rôle and carry it out without confusion or delay.

46. *Reliefs.*

1. In position warfare the garrisons of positions must be frequently relieved for rest and training.

2. When taking over a position the battalion commander accompanied by his company and platoon commanders, or their representatives, should visit the position in daylight beforehand and carry out a careful reconnaissance. Informa-

tion should be obtained, by observation or from the units to be relieved, on the following points :—

- i. Present distribution of companies, platoons, sections and of the machine guns.
- ii. Dug-out and shelter accommodation.
- iii. Work in progress and proposed.
- iv. Condition of wire entanglements and defences generally.
- v. Any special danger points.
- vi. Information as to the enemy, his positions, habits, snipers, machine guns and mortar positions, work he is carrying out, etc.
- vii. Inter-communication.
- viii. Artillery support.
- ix. Position of ammunition stores and arrangements for the supply.
- x. Sanitary arrangements.
- xi. Water and food supply.
- xii. Location of transport.
- xiii. Any defence scheme for action in case of an enemy attack.

A map of the position should also be obtained.

3. Machine guns, observers, and a proportion of the signallers should normally take over 24 hours before the battalion as a whole.

4. Reliefs will, as a rule, have to be made under cover of darkness. Guides must be provided, either from the battalion being relieved or from men of the relieving battalion who have been up in the position since the previous day. There should be a guide for each platoon, for machine guns, and for battalion and company headquarters. They must know the

exact rendezvous at which to meet the relieving units and the most covered route to their destination.

5. Strict march discipline must be kept by all parties moving to and from the position. No lights, smoking or conversation must be permitted in view or hearing of the enemy. The pace in front must be very slow and men must keep well closed up.

6. Before beginning the relief, every party must be told what action to take if the enemy attacks during the course of relief. As a general rule troops should not retire, but if caught in the open should occupy the nearest cover and get in touch with the nearest troops holding the position. Reliefs should be carried out in instalments, if possible, so that too many men are not moving in the open at the same time.

7. Patrols should always be sent out while a relief is taking place. They will be provided by the unit being relieved.

8. No post must be evacuated until the relieving troops have taken cover. In a night relief the out-going troops should get on the fire-steps, and the incoming troops form up behind them, changing places on the word "pass" from the section commanders. If the trench is too narrow, the incoming troops should lie down on the parapets, while the section commanders change the sentries. In a day-light relief any system may be used that best conceals the fact that a relief is taking place.

9. Officers and section commanders handing over are responsible that they give all possible information and hand over all stores before moving out. Receipts must be obtained for everything handed over.

10. Officers and section commanders taking over must obtain all possible information, take over stores, tell off

sentries and reliefs, get in touch with units on their flanks by means of patrols, and then send back a report at once that the relief is complete.

11. Immediately after the relief all men should be told off to their battle stations, and should occupy them until the company or platoon commander has been round and inspected the dispositions.

12. Rendezvous must be arranged for every platoon being relieved, and guides should be used to take them back if possible.

47. Routine in defence.

1. Immediately after any position has been taken over, a reconnaissance of the ground must be carried out—under cover of dusk or dawn if in contact with the enemy. All commanders, from the section upwards, must be taken over the ground which they may have to manœuvre over, as well as the positions they may have to occupy.

2. Every possible line of enemy advance should be considered, and plans must be thought out for countering each move. These plans must then be rehearsed so thoroughly that they will be put into practice, directly the emergency arises, without confusion or delay. In order to ensure co-operation commanders of support bodies must inform those on their flanks of their intended courses of action in case of attack.

3. All support companies, platoons and sections must rehearse as often as possible their action in case of attack. They must practise deploying and moving by covered routes to take the enemy in flank, by fire or assault, at all likely points at which he might break through. They should also be trained to man their prepared positions quickly on an alarm.

4. To enable troops to reach their positions in the shortest possible time, all routes must be carefully reconnoitred beforehand. These routes should be marked by posts, tape, "blazing" trees, whitewashed stones, &c. (obscured from enemy view), and all ranks should be made familiar with them. Bearings should also be taken in case these direction marks are obliterated.

5. Positions must be reconnoitred on or near these routes from which a surprise fire can be opened on enemy bodies who have captured the posts or succeeded in penetrating between them.

6. The supporting arms should be given a clear idea of the probable action and lines of advance of the various counter-attacking units. Arrangements must be made to notify them by signal or other means, directly these troops move to carry out their rôle, to enable fire to be lifted off the area over which the troops will be operating and to support their further movement.

7. The one great advantage which the defence possesses over the attack, is that every move can be carefully planned out and *rehearsed* beforehand. This advantage must, therefore, be exploited to the full.

8. During daylight all posts should be held as lightly as is compatible with security, the defence being entrusted mainly to Lewis guns.

9. In daylight one man in each section post should be on sentry. At night or in foggy weather, sentries should be doubled. In posts held by a platoon two sentries by day should usually be sufficient to cover the ground by observation, and more should only be employed if necessary. These should be doubled by night, but it must be remembered that patrolling is the best protection in darkness or fog.

10. Sentries must never lie down at night, owing to the danger of falling asleep. In daylight, however, they must assume whatever position enables them to see without being seen.

11. Sentries must know the following points :—

- i. The direction of the enemy.
- ii. The extent of ground which they have to watch.
- iii. The position of the next sentries on the right and left.
- iv. The position of the remainder of the platoon, and of the platoons on the flanks.
- v. The names of landmarks in their sphere of observation.
- vi. What action to take if they see anyone approaching the post.

If anyone approaches they should warn the post, challenge, take cover and get ready to fire. If the order to halt is disobeyed they should shoot without hesitation.

12. At night, the next relief must remain within reach of the sentry's foot, so that he may be instantly aroused and be able to warn the post without noise. The sentry must take up a position where he cannot be easily rushed. It will usually be advisable for sentries to occupy a different position to that used by day, in case the enemy may have noted it.

13. Sentries must also be trained to rely at night more on their ears, than on their eyes. They should be taught to discern the common sounds of movement. Devices should be utilized, such as trip wires, which vibrate or resound on being touched, but not when merely shaken by the wind.

14. When double sentries are employed, one of them in turn should move occasionally to a flank while the other remains halted to watch and listen.

15. Men in the posts held by the forward companies will wear their equipment constantly, unless authorized by the company commander to remove it when detailed for a working party. It must then be kept close at hand.

16. Sentries must always be posted and relieved by the section commander or his understudy.

17. Company and platoon commanders must visit their defence posts frequently and satisfy themselves that all commanders and men are alert and understand their rôle in the event of attack. They should always be accompanied by an orderly or runner.

18. Platoon and section commanders should point out to their men all neighbouring tactical features, enemy positions, any areas which require particular attention, possible lines of enemy approach, and of the positions of the posts on their flanks. They should frequently test their knowledge of these points by questions. Prominent landmarks should be given names.

19. Inspecting officers of all ranks must take great care to avoid attracting the enemy's attention to the position they are visiting. Unconcealed movement gives away the location of any post and draws fire. Unless covered communications exist these visits should be confined to dusk and dawn. No parties should be composed of more than two or three persons, movement should be as little as possible, and any visible distinctions of dress should be avoided.

20. All commanders should examine and test by actual messages the system of inter-communication.

21. They must see that the ammunition is properly distributed and readily available and that their subordinates know where it is.

22. No man may leave the post without the permission from his section commander.

23. In every post some form of alarm, other than whistles, must be arranged to give warning of gas.

24. Lewis and machine guns should be in position and loaded at night; by day they may be concealed, provided they are ready for instant action.

25. Bayonets should be fixed at night or in fog by all men of the forward platoons of the forward companies. If fixed in daylight they are likely to disclose the position of the defenders.

26. Points should be marked for firing at night. Rifles and Lewis Guns should, when possible, be fixed in a correct aiming position before darkness falls.

27. Rifles and oil bottles should be inspected morning and evening. Not more than one man in each section should be engaged in cleaning his rifle at the same time.

28. Sanitation must receive great attention, however short the possible duration of the occupation of the position. Whenever possible tins or buckets should be arranged for latrine purposes. Their contents should be buried right away from the posts. Rubbish should be collected and buried away from the posts also.

29. When fires are lit at night they should be some distance away from the defence post, and under cover if possible, so that the enemy may not notice them.

30. Great care must be taken at night never to light matches or smoke cigarettes, &c., in view of the enemy. Such carelessness may draw fire.

31. If occupying a wet or marshy position, every possible step must be taken to keep the men's feet dry: they must change their socks as often as possible.

32. All sections should man their battle positions for half an hour before dawn and dusk.

33. Rations and supplies should be brought up to the forward companies by parties detailed from the rear companies, so that the forward positions may not be weakened.

34. Platoon commanders must organize the duties and work of their sections. When holding a platoon post or when forming part of the support or reserve companies a 24-hour time-table should be prepared to show the sections on duty and working. When possible it should be so arranged that while two sections are on duty, the other two are always resting. It is of vital importance that fresh and rested men are used to mount sentry or go on patrol, particularly at night.

35. A definite programme must be drawn up for the work to be done at each post. If there is no danger of attracting the enemy's attention, as much as possible should be done by day, in order to allow men to get the fullest rest at night.

36. Strict discipline must be maintained, and the men must not be allowed to become lax in their appearance or care of arms.

37. When in contact with the enemy, patrols must be sent out by all forward companies at night or in foggy weather to keep the enemy's forward defences under observation, discover his dispositions and wire obstacles, and obtain warning of a likely attack. Maps should be kept by every battalion, on which the route and observations of patrols should be entered.

38. If not in contact with the enemy, patrols must be sent out by day and night to keep under observation all likely lines of enemy approach, and to give warning of his advance.

39. Patrols for distant reconnaissance should be detailed from the reserve company. For close reconnaissance they

should be detailed from the support platoons. The latter should :—

- i. Keep a close watch on all bodies of the enemy within reach of the outposts so that no movement can be made unobserved.
- ii. Watch all approaches along which an enemy might advance.
- iii. Examine all neighbouring localities which he might occupy preparatory to an attack.

40. Fighting patrols may be pushed out to points beyond the forward positions to break up and delay the enemy attack.

41. Constant and intelligent patrolling beyond the positions of the defence will also prevent enemy scouts or patrols from gaining information as to the dispositions and strength of the defence.

42. It must be the aim of company and platoon commanders to gain complete mastery of the ground between them and the enemy—surprise will then be impossible. Patrols must combine cunning with audacity, and with this end in view :—

- i. Their routes should be changed frequently.
- ii. They must halt at intervals to listen, but must never remain long at one spot.
- iii. They must be in a formation, such as arrowhead or diamond, in which they cannot be surprised as a whole.
- iv. They must always be on the look-out to stalk and capture an enemy patrol.
- v. Whatever happens, they must remember that their one essential duty is to get back information.

They should, therefore, be so disposed that, in case of ambush, at least one man can get away to warn the defence.

43. Patrols must always be given a definite *role* and told on what points information is specially required.

44. Sentries must always be informed when patrols are being sent out, or are returning, on their front, and in the latter case the approximate time when they will return. A pass-word may be arranged nightly.

45. At night, if patrols fail to return at the proper time, pre-arranged coloured light signals should be sent up to guide them in case they have lost their way.

46. Reports on the situation must be rendered by all commanders at frequent intervals, at the times laid down by the superior commander. It is particularly vital, however, that anything unusual is immediately reported, however trivial it may seem.

47. Every possible ruse must be used constantly to mystify, mislead, and surprise the enemy. For example, his attention may be attracted to dummy positions by firing from them at night, and by arranging for smoke to be seen rising from them at dawn—as if from cooking. New earth may be thrown up around these positions. Such ruses cause the enemy to waste his ammunition instead of expending it on the real positions of the defender. Carefully planned ruses should be a part of every defence scheme.

48. The main duties of all infantry commanders in defence, from the section commander upwards, are :—

Before battle :—

- i. Continual testing and improvement of their defence, schemes to meet a hostile attack.
- ii. Daily inspection and development of the actual defences.
- iii. Manning battle stations and rehearsal of counter manoeuvres.

During battle :—

- i. Determined resistance, and the infliction of the maximum losses on the enemy.
- ii. Skilful manœuvre to take the enemy at a disadvantage by countering his manœuvres.
- iii. Sending back frequent and accurate reports to superior commanders in rear.
- iv. Maintenance of lateral communication with formations on each flank.

CONDUCT OF THE DEFENSIVE BATTLE.

48. The battalion in defence.

1. The battalion commander, in arranging for the defence of a portion of a position, will be guided by the principles given in the preceding sections. When acting with other battalions in the defence of a section, it will depend upon local conditions whether he keeps a local reserve in his hands or not. His method of issuing orders will be similar to that described for the attack.

If acting alone, his chief object will be to defend the position with the fewest possible numbers in order to have in his hands as strong as possible a force with which to assume the offensive.

2. It is the duty of the forward companies to endeavour to break up the enemy's attack and by the timely use of their local reserves bring the enemy to a standstill before he reaches the battle position.

3. If the enemy has succeeded in penetrating into the position held by the forward companies the supports may be used either for immediate counter-attack or to prevent

further penetration by the enemy. In any case the commander of a supporting company must realize that his principal duty is to prevent the enemy breaking through to the battle position before the troops detailed to hold that position are fully prepared.

4. On the alarm being given, the reserves will man the battle positions, which will be held to the last man and the last round. If the enemy attack has definitely failed, they may be used to relieve the forward or support companies or to carry out a counter-attack on any tactical locality where the enemy has consolidated his lodgment.

5. The battalion commander must keep in the closest touch with the other arms, and must keep them constantly supplied with information regarding the situation.

6. The battalion commander must keep himself constantly informed as to the situation on his flanks either by sending out patrols or by other means.

7. The position of battalion headquarters will normally be with the reserve company, in order to facilitate inter-communication and close co-operation with the other arms.

8. When the battalion is acting independently, and its commander intends to carry out a counter-offensive, he will be with the companies held in reserve for this purpose. The best moment for the counter-stroke will usually be when the enemy appears to have expanded his reserves, and the force of the attack is weakening. If, however, an opportunity for launching a counter-stroke occurs earlier in the fight it should be seized upon at once. The attack should, if possible, be directed against the enemy's flanks, in order to threaten his line of retreat.

49. The company in defence.

Action of a forward company.

1. The distribution of the company will depend on the duties allotted to it, on the extent of the ground it has to cover, and on the nature of the ground. A normal distribution cannot therefore be laid down.

If the company is finding protective outposts to a force halted, and an enemy attack is unlikely, as many men as possible should be rested, and one platoon only may be forward with the remainder in support.

2. When the enemy attacks, the platoons in support should be ready to adopt one of the following courses of action :—

- i. To man their positions with a view to taking the advancing enemy in flank with their fire.
- ii. By the combined use of fire and movement to endeavour to close any breach made by the enemy, either by means of a counter-attack or by manœuvring in such a way to enable them to take up a position and bring effective fire to bear from one of the sides of the breach.

The decision as to which method will be used will depend on the company commander's judgment.

3. The company commander will normally be with the supporting platoons.

4. He will constantly keep in touch both with his forward platoons and with platoons on his flanks.

5. The company commander must keep his battalion commander informed as to the situation and also maintain communication with the company or companies in support.

On the quickness and accuracy of these reports will largely depend the effectiveness of the support he will receive.

Action of a company in support.

6. A company in support will normally be distributed in platoon posts in rear of the forward companies and on one of the flanks of the battalion's sector. The positions, if possible, should be chosen to allow of movement from them to be carried out under cover.

In siting the posts two considerations must be borne in mind :—

- i. They must be near enough to the positions occupied by the forward companies as to admit of immediate support being given to them before the enemy has time to reorganize after the initial attack.
- ii. They must be a sufficient distance in rear of the forward companies as to give the company commander time to realize the situation before committing his company to a definite course of action.

When the ground is suitable the posts may be echeloned in order to bring enfilade fire to bear upon an enemy who has penetrated the position.

7. Observation posts should be selected from which the area occupied by the forward companies can be seen, and the development of the attack watched. Early information gained by these means will often help the company commander in deciding when and where to intervene in the fight.

8. When the enemy attacks, and there is a danger of the attack breaking through the forward companies, the company commander has a choice of the following courses of action :—

- i. He can order his company to man their posts in readiness to take the advancing enemy in flank.

- ii. He can order an immediate counter-attack with a view to closing the breach made in the positions of the forward companies.
- iii. He can move his company to positions whence he can enfilade any further attempts of the enemy to advance.

Penetration on a narrow front places the attacker in a disadvantageous position and it is of paramount importance that effective action, whether by fire or assault or a combination of both, should be taken by the defence as soon as possible, to prevent the breach being widened.

9. The question of which of these alternative methods to adopt, will depend on circumstances.

If the enemy breaks through the forward positions quickly and on a broad front it will probably be best to fight on the positions already occupied.

A counter-attack is most effective when the enemy's original penetration is narrow, but the blow to be successful must be an immediate one, and launched before the enemy has had time to reorganize. All platoons when ordered to counter-attack should be allotted a definite objective to retake.

10. The company commander, as soon as he decides on a definite course of action, must at once inform the battalion commander and neighbouring companies of his action.

Action of a company in reserve.

11. A company in reserve will usually be at the immediate disposal of the battalion commander. It will normally be disposed in a series of defended posts or localities which it may be required to hold. In any case the commander of

the company must be ready to move his command in any direction which may be required, and he should, therefore, make himself thoroughly familiar with the ground within and adjacent to the sector allotted to the battalion.

50. *The platoon in defence.*

1. The distribution of the platoon will depend on the nature of the ground and the extent of the frontage allotted to it. It is essential that the forward posts should be able to cover the whole frontage of the platoon with fire, and the sections should be disposed so that they can mutually support each other.

2. The Lewis gun sections should be disposed in such a way that they can bring a converging fire to bear on the main avenues of approach, and their disposition as forward or support sections will depend upon the ground in the area allotted to the platoon.

3. Forward platoons should always remain fully equipped and in constant readiness to meet attack.

4. If the attack is preceded by a heavy bombardment, all men should remain under cover except the sentries.

Shelters used in the forward posts must, however, be so constructed that the men can leave them immediately in order to man their fire positions.

5. The rôle of a forward platoon is to break up the enemy's attack and to absorb and wear down his strength. It must hold the area allotted to it to the last man and the last round unless ordered by an authorized superior to withdraw.

6. The rôle of platoons in support is to assist the forward platoons either by fire from their battle positions or by means of counter-attacks.

7. Platoon commanders should send back frequent reports to their immediate superiors as to their situation and to the progress and movements of the enemy within their observation. On the quickness and accuracy of these reports will largely depend the effectiveness of the support they will receive.

THE PASSIVE DEFENCE.

51. *General principles.*

1. A passive defence can, at most, repulse an enemy's attack; it can never, of itself, achieve a decisive success. When employed against an active enemy, who has liberty of manœuvre, it is exposed to the risk of crushing defeat. For these reasons resort should never be had to a passive defence when the end in view can be obtained by other means.

2. When the object in view is merely to gain time it is usually preferable to employ manœuvre rather than passive defence. Passive defence may, however, be used with advantage to gain time when the enemy's power of manœuvre is limited, as, for example, when a position which it is difficult to turn can be occupied.

3. The general principles of the defence of such a position are similar to those described in Secs. 41 and 44 in the case of active defence, with the exception that, as no general reserve is required to initiate a general offensive, almost the whole of the troops may be utilised for the defence of the position. The frontage occupied may, therefore, be greater than would otherwise be the case, and it will be an advantage if both the front and flanks of the position are covered by obstacles. Fire may be opened at long range; and every

effort should be made to impose upon the enemy and delay his attack.

4. The garrison of a defensive post, which is not strong enough to resort to an active defence, may have to confine its efforts to beating off attack, that is to say, to a passive defence.

THE DELAYING ACTION BY MEANS OF MANŒUVRE.

52. *General principles.*

1. The conditions under which a commander may seek to delay an enemy by manœuvre and the various methods he may adopt are described in Field Service Regulations, Vol. II.

The methods to be employed by infantry will depend chiefly upon the decision of the commander based on these considerations.

2. Delaying action by means of manœuvre demands of infantry great mobility, endurance, and the power of rapid marching. It, therefore, calls for a high degree of training and discipline.

53. *Retirements.*

1. Retirements in face of the enemy must be conducted with the greatest circumspection. A hurried retreat is not only a fruitful source of panic but a great encouragement to the enemy.

Retirements should be carefully planned and organized beforehand.

2. In retiring under fire, forward units should retire alternately with their supports, affording each other mutual support by taking up successive fire positions at some con-

siderable distance apart, from which the retirement of the troops nearest the enemy can be covered.

3. Machine guns and Lewis guns skilfully handled may be of great assistance in movements of this nature, and the detachments must, if necessary, be prepared to sacrifice themselves to cover the retirement of the remainder of the force.

4. If the enemy presses the retiring troops too hard, a sudden counter-attack, not followed up too far, may relieve the pressure.

5. In certain cases, where only a short withdrawal is necessary, a few of the most active men and best shots may be left behind to cover the withdrawal of the remainder of the platoon. These men should use rapid fire to deceive the enemy as to their number. As soon as the remainder of the platoon are in their new position, these men will fall back at the quickest possible pace, under cover of the platoon's fire. Such a method is particularly applicable in warfare against an uncivilized enemy.

CHAPTER V.

MACHINE GUNS IN BATTLE.

54. Characteristics of machine guns.

1. A machine gun in action requires a frontage of about two yards. This is much less space than would be occupied by the number of riflemen required to produce the equivalent volume of fire. It is therefore easier to find a concealed position for a machine gun than for the number of riflemen required to produce an equal volume of fire.

2. When well concealed the gun offers a difficult target, and, as only two men are required for its service, it is not put out of action should these become casualties, provided the remainder of the detachment are trained to take their places.

3. As regards fire effect :—

i. The fire of a machine gun is effective up to 2,000 yards as against 1,400 yards the extreme effective range of a rifle.

ii. The machine gun possesses the power of delivering a concentrated volume of fire which, owing to the ease of control, can be rapidly directed against any desired object and facilitates surprise effect.

4. In the important matter of control of fire the machine gun has several advantages. Once the gun is loaded and laid,

fire can be turned on or off instantaneously ; it can be directed as readily as required and can be distributed laterally by traversing.

5. By mounting a few men on the limbered wagon, the guns can be moved rapidly from place to place, while a machine gun with tripod mounting can be taken wherever men on foot can go.

The mobility of the machine gun, however, depends on its method of transport. When carried in the limbered wagon, the mobility of the machine gun on roads, tracks, or open ground is greater than that of infantry. When carried on pack, its mobility depends on the animal and the method employed to lead the pack animal : when the pack animal is led by a man on foot the mobility is rather less than that of infantry : when it is led by a mounted man the mobility is rather less than that of cavalry. When the machine gun is carried by the detachment its mobility is considerably less than that of the infantry on account of the weight of the gun, ammunition and equipment.

6. On the other hand, the machine gun has certain disadvantages as compared with riflemen :—

- i. It is more defenceless when on the move, whether carried in the limbered wagon or on pack transport.
- ii. Owing to the concentrated nature of its fire as compared with a similar amount of rifle fire, the effect of small errors in aiming or elevation is greater. Thus, a comparatively small error at effective or long ranges will cause the fire of a machine gun to miss altogether a target which would probably be struck by several shots from riflemen making the same error in aim or elevation.

- iii. Being a mechanical weapon the machine gun is liable to accidental cessation of fire, though this disadvantage is largely offset by the provision of spare parts and the use of suitably packed ammunition.
- iv. The peculiar noise of the automatic firing attracts attention to the gun.
- v. The water in the barrel casing boils after about 600 rounds of continuous fire and steam is given off. Unless the condenser is carefully fitted in time, the position of the gun can be readily located if it is not well concealed.
- vi. The discharge of the bullets and gases from the muzzle creates a blast which may raise a considerable dust when the gun is fired from a low mounting. This can be prevented either by wetting the ground beneath the muzzle or by laying down wet sandbags. The blast will also produce a fan-shaped mark which is clearly visible from the air and requires concealment by artificial means.

55. *General principles of the employment of infantry machine guns.*

The following general principles governing the employment of machine guns are based upon the characteristics described in the previous section.

- i. The machine gun is a powerful auxiliary to, and well adapted for close co-operation with, the other infantry weapons.

- ii. The concentrated and accurate nature of its fire, and the speed with which it can be directed on the objective, suits it for the development of surprise effect and covering fire at effective and close infantry ranges.

The fixed tripod mounting admits of an accurate fire being carried out with safety over the heads of our own troops. Direction and elevation can be put on and maintained both by day and night, and indirect fire can be employed.

- iii. The small frontage which it occupies makes it valuable in cramped localities such as salients, villages, roads, or defiles, where it is not possible to deploy a number of rifles. It can also be usefully employed to bring a concentrated enfilade fire to bear on a definite line, such as a hedge, wall, or line of obstacles.
- iv. The power of opening fire at any time when the gun is once laid is valuable on outpost or for night firing, for the gun can command any required locality for any length of time, and it is only necessary to press the thumb piece to produce and apply a large volume of accurate fire at the moment it is required.
- v. The power of turning rapidly in any desired direction, or of "all-round traverse," enables the gun to be brought to bear upon a fresh target without moving the tripod, and with the minimum of movement and exposure. The machine gun can therefore engage quickly an enemy advancing from an unexpected direction without increasing its vulnerability to enfilade fire. This suits it

for employment on a flank, in a detached post, or to support infantry in meeting an enveloping attack.

- vi. The power of accompanying infantry in any nature of country is particularly useful in close country. The mobility of the limbered wagons allows the guns to be used to meet unexpected or critical situations so that they may often be usefully employed as a mobile reserve of fire.

56. The organization and tactical handling of infantry machine guns.

1. The machine gun platoon, consisting of two sections each of four guns, forms an integral part of the battalion to which it belongs. But as circumstances will often make it advisable to employ platoons or a proportion of them together, a brigade commander may detail some or all of the machine gun platoons temporarily from their battalions and place them under a selected machine gun officer.

2. It will usually depend upon the general situation and upon the ground how many machine guns should be brigaded and how many (if any) left with the battalions to which they belong.

3. In attack, when the facilities for control are good, good results may be obtained by unity of command, and, by a timely concentration of fire, machine guns may be an important factor in the struggle for superiority of fire.

When control is difficult, or when the brigade is extended over a wide front, it will usually be better to leave guns with their units.

It will often be advisable to employ both methods and to leave their own machine guns with the battalions which are first extended, while those of battalions in reserve are brigaded.

4. An ample proportion of machine guns should be allotted to an advanced guard. They should be placed well forward in the order of march in order to enable them to come quickly into action. The main duties of machine guns in an advanced guard will normally be :—

- i. To assist in driving in the enemy's advanced troops by rapid development of fire at the required points.
- ii. To assist in holding any position gained and in covering the deployment of the main body.
- iii. To protect an exposed flank or flanks.

5. The energetic and determined support of the infantry by fire is the main duty of machine gun units throughout the whole course of the battle. In the attack they must carry out this task by providing covering fire, both direct and indirect, and by dealing rapidly with any hostile targets which may present themselves during the course of the battle. Their other duties are to protect the flanks of the infantry against counter-attacks during the advance, to hold tactical localities upon which the infantry can rally if driven back, and to act as a reserve of fire power in the hands of commanders for offensive or defensive purposes as the situation may demand. It follows from the above that machine guns must be distributed in depth throughout the battle.

6. The fire of machine guns may be either direct or indirect. Primarily the machine gun is a weapon for direct

fire, but indirect fire may be usefully employed to search localities on which direct fire cannot be brought to bear, and to harass the enemy's back areas and communications. Indirect fire also permits of distribution in depth without undue sacrifice of fire power.

7. In an attack the available machine guns will normally be divided into forward, support and reserve guns. The general distribution at every stage of the attack must be such that :—

- i. Commanders will have sufficient machine guns in reserve with which to obtain superiority of fire in the event of any serious resistance being encountered.
- ii. Rapid intervention to a flank may be possible.
- iii. Adequate distribution in depth may be maintained as a defence against possible counter-attack.

8. The duties of machine guns in the defence are :—

- i. To assist the infantry in the outpost zone to check and to disorganize a hostile attack.
- ii. To assist in the defence of the battle position should the enemy succeed in penetrating the outpost zone.
- iii. To check the advance of the enemy, should he penetrate the battle position.
- iv. To assist the infantry and tanks in the execution of counter-attacks.

9. In order that the fullest value may be obtained from machine guns it is necessary that all schemes of defence should be based on the closest co-operation between the machine guns and the artillery, and the defensive position

selected for occupation should be largely chosen with this end in view.

10. In the distribution of machine gun units the main consideration is the defence of the battle position. Only a small proportion of the available machine guns should be allotted to the outpost zone, these guns being detailed for tasks which cannot adequately be carried out by the Lewis guns of the battalions.

11. In a retirement an ample proportion of machine guns should be allotted to a rear guard. The machine guns should be disposed mainly on the flanks, and they should be sited with due regard to the prospects of ultimate withdrawal. Defence in depth must be maintained by the retirement of alternate sub-sections or sections, and full use should be made of the limbered wagons and pack animals for this purpose.

12. In all operations a machine gun commander should be given definite orders by the commander of the body of troops to which he belongs as to what is required of him, but he should be allowed as much freedom of action as possible in carrying out these orders, and should be kept informed of all changes and developments of the situation which may affect his action.

Initiative and enterprise are essential to the effective handling of machine guns.

CHAPTER VI.

CO-OPERATION WITH THE OTHER ARMS.

CO-OPERATION OF TANKS WITH INFANTRY.

57. General considerations.

1. The main characteristic of the tank is its power of developing a high degree of offensive power during movement without exposure of the crew to rifle or machine gun fire.

2. An attack carried out by tanks and infantry should be considered as one combined operation in which each arm helps the other, and not as two separate operations; the common object being the infliction of the maximum loss on the enemy at a minimum cost.

3. Formations adopted by tanks and infantry should be such as will allow the fullest development of the power of all available weapons and at the same time entail the least possible exposure of personnel to hostile fire.

4. Each arm must be employed against the hostile weapon with which it is best suited to deal and must be protected by the other arm against those weapons from which it has most to fear, *e.g.*, the tank, owing to its fire and crushing power, is specially suited for dealing with hostile machine guns from which the infantry is liable to suffer severely, while tanks are vulnerable to artillery fire and require support from the fire of infantry weapons when exposed to it.

5. To secure successful co-operation on the battlefield previous combined training and personal acquaintance of all ranks are of the utmost importance. The longer the same units work together the greater will be the mutual confidence established and the more effective the co-operation between them.

58. Capacities and limitations of tanks.

1. Although the speed and radius of action of tanks are constantly increasing, the mobility of those at present in the service is limited.

The Mark V tank, armed with two 6-pdr. and three .303-inch Hotchkiss machine guns, has an average sustained speed of $2\frac{1}{2}$ miles an hour across broken ground. It can cross a gap with vertical sides 10 feet wide and surmount a vertical parapet 4 feet 6 inches high.

The medium "C" tank, armed with three .303-inch Hotchkiss machine guns, has an average sustained speed across country of 5 miles an hour. It can cross a gap with vertical sides 10 feet wide and climb a 3 feet 9 inches vertical parapet.

2. Deep soft mud and marshy ground decrease the effectiveness of tanks. Woods composed of large trees growing close together form obstacles to their movement, but not those composed of small trees or undergrowth.

3. Owing to the conditions prevailing in a tank in action and the necessity for replenishment of petrol, &c., the period of time during which it can operate without relief is limited.

59. Allotment of tanks.

1. Tanks should not be dissipated in small numbers along the front of operations. The maximum effect from a given number of tanks and the greatest assistance to infantry is

obtained by concentrating tanks, organized in depth and with adequate reserves, in accordance with the number and strength of tactical points to be encountered.

2. As a rough guide, the number of tanks necessary in an attack may be calculated at one tank for every 100 yards of front, exclusive of reserves.

3. The smallest tank unit which should be employed singly is the section of four tanks.

60. Infantry and tanks in the attack.

1. The action of tanks and infantry in the attack is based on the principles stated in Sec. 57, 3 and 4.

In the early stages of an attack, when hostile wire and machine gun fire are the chief forms of opposition to be expected, it will generally be necessary for tanks to move with or in front of the infantry. During subsequent advances when the hostile opposition has been partially broken down the infantry should move out well in front of the tanks, the latter being withdrawn into support. The tanks will then advance by bounds until required for a definite operation against a centre of resistance.

2. In an attack covered by an artillery barrage the normal formation of a tank section is as follows:—

Three tanks advance in front line with an interval of 100-200 yards between tanks, the fourth tank following in support at 200-300 yards distance.

In an attack without an artillery barrage the centre tank of the three in front line forges 100-200 yards ahead acting as a mechanical scout, and in some degree replacing a barrage.

3. The functions of the infantry acting with a tank are twofold :—

- i. To secure and hold the ground gained.
- ii. To deal with any hostile troops passed over by the tanks and to clear dug-outs, &c.

4. In the initial stages of an attack the normal dispositions of infantry will be as follows :—

Where no wire or obstacles of a similar nature have to be traversed, the leading troops will move by sections either close in rear of, or in the intervals between, the firing line tanks, keeping in such formation as is most easily controlled subject to the nature of the ground and direction of hostile fire. Lewis gun sections will lead and rifle sections will follow.

When wire has to be negotiated sections should follow the tanks at 30 yards distance to avoid injury from the strands of wire thrown up by the tank, and should traverse the wire in single file.

5. Infantry should avoid bunching behind tanks, and should invariably be preceded by scouts.

6. Lewis guns should be used freely to cover the intervals between tank sections by fire.

7. Supports will follow the support tank in artillery (Sec. 6, 3) or other suitable formation.

8. When the hostile resistance has been sufficiently broken down, infantry should move forward and continue the advance well ahead of the tanks which should be withdrawn into support till required to deal with the centres of resistance.

9. When centres of resistance are encountered during the progress of an attack, infantry and tank commanders on the spot must immediately concert arrangements for an *organized* combined attack.

Such an attack should be based on the following principles :

(a) The duty of tanks is :—

- i. To force the enemy to take shelter and to deny him the use of his weapons.
- ii. To divert attention from the infantry attack and protect it from machine gun fire.

(b) The duty of the infantry is :—

- i. To capture the centre of resistance and
- ii. Having captured it to hold it.

To carry out these duties tanks require ground which they can negotiate, and cover from hostile artillery fire and observation.

Infantry require cover from flanking machine gun fire.

Normally, therefore, since ground governs tank movements, the tank commander should be allowed to select his line of approach, and the infantry should conform, choosing that line which will enable them to co-operate most promptly with the tanks without their own fire, or that of the tanks, being masked.

Some artillery support will generally be required, and if possible a smoke screen.

10. When, during an attack, tanks come under the direct fire of artillery, it is the duty of the infantry to develop such a volume of fire from all available weapons as will pin the hostile gunners behind their shields and interfere with the accuracy of their fire. Under cover of this fire the tanks should manoeuvre in such a way as will enable them to

attack the hostile guns from a flank in conjunction with the infantry.

11. It will often be possible in a combined operation to arrange for the infantry to be lightly armed and equipped and for tanks to carry extra ammunition, tools, &c. Carrier tanks when available will be utilized to bring up ammunition, supplies, and tools required for consolidation. In operations with a limited objective, it may also be possible, when sufficient tanks are available, for reserve tanks to bring up additional small arms and light mortar ammunition on sledges or trailers towed by the tank. In this way the mobility of infantry may be greatly increased.

A signal must be pre-arranged to denote when and where ammunition, &c., carried by tanks is to be dropped.

12. When the objective has been gained tanks should not remain on it as they only serve to draw artillery fire, but should rally to prepare for further operations.

If tanks are to press forward and carry out the pursuit, a special body of light tanks from the reserve will be detailed for the purpose.

61. *Rear guards.*

1. In a retirement co-operation between infantry and tanks is a matter of extreme difficulty, but tank commanders must keep in close touch with the situation and do all they can to facilitate the withdrawal of the infantry.

The mobility of tanks enables them to press home into the advancing enemy, thereby disorganizing his advance and at the same time obtaining protection from his artillery fire.

The tanks will withdraw in two echelons covered by smoke emitted from the exhaust or fired from 6-pdr. guns or rifle grenades.

2. Infantry must not think that because they see tanks moving rapidly to the rear that they are being deserted.

62. *Defence.*

1. The tank is primarily an offensive weapon. Its rôle in defence is consequently that of counter-attack. Owing, however, to the damage to material which will inevitably be done by the enemy's bombardment, if tank units are located in the forward area in anticipation of a hostile attack, it is necessary to hold these units in reserve, sufficiently far to the rear to secure reasonable immunity from hostile artillery fire. As the distance will usually amount to four or five miles, infantry cannot normally expect assistance from tanks in carrying out an immediate counter-attack.

Tanks will, therefore, generally be used to assist the counter-attack by larger formations, or for counter-offensives.

2. The aim of tanks will be to disorganize the enemy attack, and so allow the defending infantry to rally. The infantry must, therefore, be ready instantly to seize any opportunities to reorganize its defence or to carry out local counter-attacks.

3. Infantry commanders must, however, keep the tank commanders informed of their intentions when counter-attacking. Runners should be carefully trained for this purpose.

63. *Village and wood fighting.*

1. Of all forms of fighting, village fighting requires the closest and most skilful co-operation of tanks and infantry, owing to the ease with which the enemy garrison can hide from the tank.

2. Before making an attack on a village, wood, or other centre of resistance, a personal joint reconnaissance by the

infantry and tank officers on the spot is specially important to ensure that complete arrangements are made for close co-operation between the two arms before, during, and after the attack, and that plans are drawn up for the rapid organization of the defence of the captured locality if it is not intended to continue the advance.

3. When infantry attack villages, woods, or defended localities, the tanks should assist by destroying the enemy's machine gun positions, by attacking the defenders simultaneously from several directions, by enfilading the defences, and by covering the flanks of the attacking infantry. The tanks must maintain close touch with the infantry throughout the operation, and should not advance into the village or wood until the infantry is firmly established in the outskirts.

4. In attacking large villages, big woods, or any large area of resistance, it will sometimes be necessary to carry out the attacks methodically by sectors, one sector being secured before the attack is made on the next.

In towns and villages some tanks must remain in a street until the cellars and upper stories of the houses have been cleared.

5. In some cases large areas may be enveloped by infantry, who, protected by tanks on their inner flanks, advance on both sides of the defended locality to objectives beyond. The enveloped area may then be cleared by parties of infantry and tanks specially detailed for the purpose.

In such cases adequate arrangements must be made to prevent bodies of infantry attacking from different directions firing into each other.

6. The opportunities created for the infantry by the action of the tanks are fleeting, and must be seized without delay.

64. *Signals.*

1. Three simple flag signals are used by tanks to convey information to infantry. These are :—

- i. Green and white flag.—The enemy opposition is crushed ; all is clear for you to come on.
- ii. Red and yellow flag.—This tank is broken down ; do not wait for it.
- iii. Red, white and blue flag.—Friendly tank coming out of action (to refill with petrol, &c.).

CO-OPERATION WITH ARTILLERY.

65. *General considerations.*

1. Infantry can rarely act effectively without artillery support. It is the whole duty of the artillery to assist the infantry under all conditions of warfare. To this end the closest touch must be maintained between the two arms, so that artillery fire may be quickly and accurately applied at the right place and time with the object of preserving the infantry's freedom of action.

2. The infantry must strive by every means at their disposal to keep artillery commanders continuously informed of their position and to indicate clearly, and as precisely as possible, where and when artillery fire is required. The method of application rests with the artillery commander.

3. Inter-communication between infantry and artillery is effected by :—

- i. Personal liaison between the respective commanders.
- ii. Artillery liaison officers to infantry.
- iii. Signals from infantry to artillery.

4. Personal liaison between infantry and artillery commanders is the best form of liaison under all circumstances, whether before or during an operation and to this end their headquarters should, as a matter of principle, be close together whenever possible.

It is essential that the artillery commander should be able to supervise and control his artillery from his headquarters; this, in default of secure signal communications, will usually necessitate his being close to his batteries. In these circumstances, the infantry commander, if he can do so without prejudicing either his control of the infantry battle or the maintenance of touch with his superior commanders, should move his own headquarters into close proximity to those of the artillery.

When it is not possible for the two headquarters to adjoin, the infantry commander will be responsible for ensuring continuous inter-communication between himself and his artillery commander; this does not absolve the latter from the responsibility of doing everything in his power to assist in the maintenance of inter-communication. In such case the artillery commander will detail a competent artillery liaison officer to the headquarters of the infantry commander. This liaison officer is not an executive officer. It is his duty to represent his commander, to advise the infantry commander and to keep him informed on all matters relating to artillery co-operation and to transmit to the unit to which he belongs the situation of the infantry and the infantry commander's intentions and requirements as regards artillery support. It must be remembered that artillery liaison officers are useless if they are unable to communicate with their units.

5. The infantry must always help the artillery and keep it informed of its precise position and pass on all information

immediately in order to obtain the maximum artillery support.

6. The infantry commander should not limit the action of the commander of the artillery in immediate support, but should, after explaining the situation and his requirements, give him a free hand.

7. Every opportunity should be taken by infantry officers of all ranks to become personally acquainted with the artillery officers working with them.

In position warfare arrangements should be made for the close co-operation of infantry officers with the counter-battery organization. It should be impressed on all infantry officers that the support which they may receive from this source will largely depend on the quickness and accuracy of their reports of hostile shelling.

8. In reporting cases of hostile shelling the following points should be clearly stated, as far as known :—

- i. Hour at which shelling began.
- ii. Calibre and nature, and number of guns firing.
- iii. Areas shelled (by map reference, not by local name).
- iv. Direction by grid bearing, or by a bearing from some landmark of the flash or sound, which of the two it is should be stated.
- v. Whether material damage has been done.
- vi. Hour at which shelling ceases and approximate number of rounds fired.
- vii. Position of the individual making the report.

Reports of hostile shelling must not be confined to that falling in the immediate neighbourhood of the infantry concerned. It must be remembered that communication with

a bombarded area may often be cut, and thus direct reports cannot be made.

9. In an encounter attack the manner in which close co-operation between artillery and infantry is to be maintained throughout the attack must be clearly indicated and instructions issued as to what units of the two arms are to be associated for each tactical operation.

During the early stages of the attack the artillery will concentrate on those definitely located enemy batteries which are impeding the infantry's progress. When the infantry begin to feel seriously the effect of the enemy's machine gun and rifle fire, the artillery fire will be concentrated on those localities from which effective fire is being brought to bear on the attacking infantry.

In an encounter battle, extensive barrage fire is generally impossible. If, however, circumstances and resources warrant it, or if attacking troops are held up over any considerable frontage by determined resistance, a form of barrage fire may prove effective. Its organization, however, requires time for careful preparation. Rapid fire will be used by artillery when the leading units are seen to be in need of assistance; infantry should take advantage of these periods of rapid fire to gain ground. The artillery will continue observed fire until as late a moment as possible, but will make its fire conform to the infantry movements, so as not to delay the delivery of the assault.

10. The infantry should be careful not to interfere with the fire of guns in action. A line of guns should be passed on the flanks, or in the intervals between batteries and brigades. If it is unavoidable that infantry should pass through guns, it should do so at the double. On level ground infantry ceases to mask the fire of artillery about 500 yards in front of the guns.

CO-OPERATION WITH AIRCRAFT.

66. *General considerations.*

1. The co-operation of the air service with infantry is of first importance.

In addition to their value for reconnaissance purposes, the offensive capabilities of aircraft against ground targets are very great. To obtain the full effect from these, the closest liaison and co-operation with the troops on the ground is necessary.

Successful co-operation between aircraft and infantry is largely dependent on the knowledge each arm has of the tasks, capabilities and limitations of the other.

2. Before considering the various tasks which aircraft can undertake for the assistance of the infantry, a clear conception must be formed of those difficulties of the airman which can be neutralized either wholly or in part by the intelligent co-operation of the infantry.

These difficulties are:—

- i. *Difficulty of observation from aeroplanes, and the comparatively short time the observer has at his disposal for making observations.*

The details of the methods to be employed in conveying information from the ground to aircraft are dealt with in subsequent paragraphs. The difficulties of carrying them out successfully will be lessened if signals are given immediately they are called for from the aeroplane, and adequate means taken to ensure that the airman's view is not unnecessarily obstructed. Strips or panels are best sited when they give the observer

a dark background, and so far as possible they should not be displayed close to conspicuous objects of similar colour. It is necessary for ground signallers to know when an aeroplane is in a position to receive signals and when not. The most favourable position is when the aeroplane is not directly over the sending station but has left it on its flank, that is, when the observer would be looking downwards and somewhat to his rear. The most unfavourable position is when the machine is flying directly towards or away from the sending station.

All signals must be continuously sent or displayed until an acknowledgment is received from the aeroplane.

Complicated systems of signalling are to be avoided. They are likely to break down in battle.

ii. *Difficulty of detailed communications with aircraft when in the air.*

It follows from this that orders given to aircraft, once the machine has left the ground, cannot easily be changed. A hastily changed plan may on this account result in the failure of the machines to give the expected assistance. In order, however, that allowance may be made for alternative action by aircraft in a changing situation, it is necessary for pilots and observers to be fully acquainted with plans and possibilities. This indicates the value of a personal interview, if it can be arranged, between the observer and the commander of the unit for which he is working.

3. All ranks should be familiar with the distinctive features of friendly aircraft, both in order that friendly and hostile aircraft may be readily distinguished and also in order that the particular rôles assigned to our own machines, for which special markings are allotted, may be readily recognized.

67. Duties of aircraft.

1. Aircraft are detailed to co-operate with infantry for the following purposes :—

- (a) Reconnaissance.
- (b) Offensive action with bombs and machine-gun fire.
- (c) Supply.

Reconnaissance duties.

2. Reconnaissance duties by aircraft supplement but in no way take the place of other forms of obtaining and transmitting information. They can be considered under the following headings :—

- i. Information.
- ii. Contact patrol.
- iii. Counter-attack patrol.

Of these the first is more applicable to the conditions of open warfare, the others primarily to the conditions of deliberate highly-organized attacks.

Information.

3. The receipt of information dropped from aircraft is mainly dependent upon the proper use of battalion and brigade identification marks, and precautions must be taken

that the desire to conceal these marks from the enemy does not result in concealment from our own observers as well.

4. Information received from aircraft cannot be always relied upon, for example, negative information supplied by aircraft may, under certain conditions, prove untrustworthy. Positive information may generally be taken as reliable.

Contact patrol.

5. The duties of contact patrol observers are :—

- i. To locate the position of our own troops.
- ii. To transmit this information as rapidly as possible.
- iii. To transmit messages from brigade and battalion headquarters.

It is also likely that in battle contact patrol machines will give the attacking infantry information concerning the enemy's dispositions and movements. Though this is primarily the task of counter-attack patrols, yet local information of this nature, which would be of immediate value to the attacking infantry, may be expected from contact patrol machines whilst carrying out their normal functions.

6. As much notice as possible should be given to the squadron concerned to allow the observer time to visit the infantry headquarters with which he is to work so that he may familiarise himself with their plans.

Recognition of contact patrol aeroplanes.

7. Aeroplanes detailed for special contact work must have special standard markings, which should be known to all ranks of the infantry with which they are working. Markings that will be used are :—

- i. Pieces of 3-ply wood painted black, about 12 in. by 18 in., attached by hinges to the trailing edge of each lower plane about 8 ft. from the fuselage.
- ii. A long, narrow wind vane attached to the rudder.

These markings will be made detachable for use when actual contact patrol is carried out and communication with infantry is desired.

8. Contact patrol aeroplanes will, in addition, carry a Klaxon horn and signal lights for the purpose of making themselves known. The Klaxon horn is also used to answer signals received from the ground. The attacking infantry may, as a general rule, expect to see its contact patrol machine slightly in rear of the leading infantry.

Methods of communication between infantry and contact patrol aeroplanes.

9. Contact patrol aeroplanes receive signals from :—

Attacking infantry.

Battalion and brigade headquarters.

10. The attacking infantry notifies his position to the aeroplane by means of flares, white cloth flaps moved about or tin discs 4 in. to 6 in. in diameter flashed in the sun. The disc is a much easier signal for the observer to see on a sunny day. Flares will be lit, flaps moved or discs flashed :—

- i. By previous arrangement :—

(a) At specified times.

(b) At specified places.

The former plan is, as a rule, preferable, but it is not always possible to warn the infantry beforehand that the

contact patrol aeroplane will appear at a particular time. The infantry, however, should be thoroughly trained so that whenever the contact aeroplane gives the signal (*see para. 7*), flares will be lit, flaps be moved or discs flashed even though they have not been previously warned that a contact patrol is going to be carried out.

The approximate hours at which flares will be lit, flaps moved or discs flashed should be laid down in orders. At these hours the attacking troops must be on the look-out and must light their flares, move their flaps or flash their discs when their aeroplane calls for them by Klaxon horn and smoke signal. (*See ii. (a) below.*) About half an hour after the objective is expected to be reached has been found a suitable time for signalling.

ii. Without previous arrangement:—

- (a) When called for by the aeroplane by a succession of "A's" on the Klaxon horn or a special smoke signal.
- (b) On the initiative of local commanders who may wish to make their position known. Signals should only be given by the order of local commanders when the aeroplane which is working with their formation is flying in their vicinity.

Flares should be lit in groups of three about every 30 yards, as ordered or when called for by the aeroplane observer. Flares should only be lit by order of an officer or non-commissioned officer.

Flares can be seen if lit at the bottom of trenches or in shell-holes, but care must be taken that there is no obstruction between the flare and the aeroplane.

If the troops are using flares and cannot light them at once they should wait for a repetition of the call from the aeroplane before doing so, otherwise flares may be lit when the observer is not in a position to see them.

Discs must be flashed as ordered or when called for by the aeroplane observer. Each man must be provided with a disc which may be fixed to the inside of a flap attached to the gas respirator haversack. If, in addition, the flap is painted white inside or is of white American cloth, it will attract the aeroplane observer's attention when held open and moved about, even on a dull day.

When signals are called for by the aeroplane it is important that they should be given by the most advanced troops.

11. Brigade and battalion headquarters indicate their position and identity and send messages to the aeroplane by means of the "T" (Popham) signalling panel and ground strips.*

Training in contact patrol work.

12. All commanders must take steps to ensure the thorough training of infantry and observers in contact patrol work. This training must be continuous and carried out in units as opportunity offers.

13. Training must be carried out in accordance with the above instructions. Unauthorized alterations are forbidden, as they lead to misunderstandings and may lead to heavy casualties. Every officer, N.C.O. and man must be acquainted with the regulations to such an extent as to give him a working knowledge of the subject and to

* Details of the methods to be employed will be found in Signal Training Manual, Part II, Appendix III.

enable him to act on his own initiative. Signal personnel should receive special additional training.

14. The importance of the contact patrol aeroplane will only be fully realized during battle, and infantry observers must, therefore, be trained under conditions approaching as closely as possible to those obtaining during battle (absence of all telephone lines and ground observers).

Counter-attack patrol.

15. The duties of the counter-attack patrol observer are :—

- i. To report on the enemy's general dispositions and defence.
- ii. To locate the position of the enemy's front line, mortars and machine guns, centres of resistance holding up our advance, the massing of enemy troops for counter-attack, any hastily improvised enemy defence organizations, or other targets of similar nature.
- iii. To call for concentrated artillery fire (LL or GF calls) or barrage fire when required by the situation.

Offensive action.

16. Aircraft can assist the infantry by the use of machine gun fire from low-flying aeroplanes, and by dropping bombs both explosive and smoke filled.

17. The orders for the part to be taken by aircraft in battle will be given by the commanders of higher formations. In order, however, that the full effect may be obtained from bombing and machine gun fire from the air, it is essential that the infantry should immediately seize any opportunity for a forward advance which the action of aircraft may produce,

and also that the infantry should be prepared to take advantage of any favourable targets which our own aircraft may cause the enemy to present.

Supply of ammunition, rations, &c.

18. It is possible for aeroplanes to drop boxes of ammunition and rations, baskets containing pigeons, &c., by means of parachutes, with considerable accuracy to advanced troops in cases of emergency.

It should be clearly understood, however, that the employment of aeroplanes on this duty reduces the number available for contact and counter-attack duties. Requests for ammunition, &c., to be dropped should only be made under special circumstances when the ordinary means of supply fail, or are likely to be so delayed as to endanger the progress of operations.

One aeroplane can drop two boxes of ammunition in one flight, and 20,000 rounds a day may be considered as an approximate guide to the capabilities of a corps squadron in this respect when it has other duties to perform. Certain authorized ground signals should be made by the infantry by means of ground strips when calling for ammunition, &c., to be dropped.

CHAPTER VII.

FIGHTING IN CLOSE COUNTRY,
WOODS AND VILLAGES,*68. Influence of close country on tactics.*

1. Any tract of country in which view and movements are seriously restricted by woods, fences, or high crops, is "close country." In such areas the enclosures may be bounded in different ways—for example, by simple wire fences which do not interfere with view, do not afford cover from fire, and are a considerable obstacle to movement; by dense hedges, which give cover from view but not from fire, and are difficult to surmount; or by high banks, which afford complete cover from view and fire, and are not a serious obstacle to infantry. The influence of enclosed country upon tactical methods also changes with the season of the year, and is not the same in winter when trees and hedges are bare as it is in summer when they are in full leaf.

2. Generally speaking, in close country, owing to the limitation of the field of view and of fire, the employment of artillery is restricted; machine guns, on the other hand, are well adapted for supporting infantry closely. Close country hampers deployment both for attack and for counter-attack, and makes it more difficult to discover when and where

to strike an effective blow. An important characteristic of fighting in close country is the loss of higher control, which calls for more initiative on the part of subordinates in order to ensure combination.

3. Troops fighting in close country are usually very sensitive as to their flanks, as they are unable to see what is going on. This fact affects the defence more than the attack, for there is danger that a defended line penetrated at one point may give way everywhere. Further it is particularly difficult in close country for the defenders to deliver local counter-attacks in the most effective direction, or to organize converging fire against captured localities.

4. Attack and defence will be based on the same principles and tactical considerations laid down in Chapters III and IV, though certain minor modifications of method are necessitated by the special conditions.

5. In close country infantry has, under these conditions, to rely more on its own resources, as the action and movements of tanks and artillery are slower and more difficult. For this reason the machine gun and mortar become of great importance as supporting weapons.

6. Information as to the enemy's dispositions and movements is more difficult to obtain as they can be concealed more easily from the air.

7. Close country favours delaying action, but not a protracted defence. By employing troops in forward covering positions, the defence is able to force the attackers to deploy earlier, and such deployment is necessarily hampered by the conditions of the ground, while the withdrawal of the covering troops is rendered easier. On the other hand, defence is more difficult, as the attackers may be able to approach the defenders unseen.

8. Frontages allotted to units will be less than in more open country and reserves will be held closer to hand in order to keep touch, prevent the enemy breaking through localities held, or to restore the local situation. On the other hand, enclosed country will afford greater opportunities for manœuvre and for penetrating into the weak portions of the defence.

69. *Special considerations on the attack in close country.*

1. Close country gives the attacker two great advantages :—
 - i. He can obtain more cover and so suffers less loss than over open ground.
 - ii. He can screen his movements and so surprise the defence both as to the direction and the weight of his blow.

To reap these advantages the attacker must be trained in manœuvring in close country ; he must make careful preparations to ensure control and overcome the difficulties likely to be met ; he must make an even fuller reconnaissance than usual.

2. The two main disadvantages are the difficulty of control, and of obtaining support from the other arms.

3. Deployment may be made later, as the infantry, by taking advantage of covered approaches, can move in close formation until near to the enemy.

4. Great care must be taken to keep the true direction, as the objective can rarely be kept in constant view. The use of the compass is of vital importance, and before the attack begins the bearing of the objective should be made known to all officers and section commanders. The danger of losing direction is greatest when making use of covered approaches or seeking gaps in an obstacle.

5. Owing to the short range to which the forward infantry are able to approach before coming under fire they must be prepared to come under a heavy surprise fire at any moment. To meet this danger they must be trained in instantaneous deployment, combined with the immediate opening of fire.

6. When moving in file along covered approaches such as hedges or ditches, infantry must guard against a sudden enfilade fire. Hence scouts in advance are more essential than ever.

7. When the nature of the country is such that the different units of the attacking infantry cannot keep in view of each other, commanders must make adequate arrangements to maintain touch with units moving on their flanks. This may be done by observers or by patrols meeting at places previously selected on the line of advance.

8. The use of arrowhead and file formations instead of the extended line is the best guarantee against the natural tendency to confusion and disorganization caused by operating in close country.

9. The forward units should always move with a pair of scouts ahead, who should advance until held up by fire. One scout should then take up a position of observation while the other communicates with his commander as to the direction and volume of fire. Touch must always be maintained between units and their scouts.

70. *Special considerations on the defence in close country.*

1. Infantry must endeavour to counteract the difficulties mentioned in Sec. 69 by clearing the foreground and improving the avenues of communication.

2. The local immediate counter-attack becomes an even more vital factor in defence in close country as the oppor-

tunities of local penetration by the enemy are greater and once effected are more dangerous owing to the difficulties of locating the limits of the hostile gains and of checking the movements of his supporting troops.

3. Commanding positions in enclosed country provide an easy objective for the enemy's infantry and artillery and so tend to assist the attack. On the other hand, they may offer such advantages in the form of an increased field of fire and observation as to make their occupation by the defenders advisable.

WOOD AND VILLAGE FIGHTING.

71. General considerations.

1. Woods and villages form natural magnets for troops operating in their neighbourhood. The fact of their being easily visible, and named on a map, makes them obvious reference marks. Thus they are used to indicate points of direction in an advance or to define the boundaries between units. Moreover, troops are instinctively drawn towards them in search either of a covered approach or of a tangible object to attack or defend.

2. Villages also gain importance as centres from which to obtain water, supplies and shelter.

Woods afford lines of approach and concentration are as covered from the eyes of the enemy aircraft. Both woods and villages may be used effectively to break up a hostile attack.

3. In any case, on an extended battle front it is almost impossible for some of the units to avoid operating in them, even though other parts of the force are fighting in open country.

72. Influence of woods and villages on tactics.

1. Movement is bound to be slower, and communications are greatly hampered. The difficulty of keeping touch is accentuated as the view is restricted. To counteract this, intervals and distances should be reduced.

2. Accurate artillery support will be more difficult and infantry may have to depend more on their own resources backed up by machine guns and mortars.

3. Fighting will be at close range. Therefore infantry must be ready to develop a heavy and instantaneous fire at any moment.

4. It is vitally necessary to keep troops in hand ready to meet emergencies.

5. The bayonet assumes a greatly increased importance, because it is a silent weapon. Parties of the enemy may be surprised and killed without neighbouring parties becoming aware of the fact.

73. The attack in woods.

1. The narrow field of view and fire in a wood gives the attacker a great advantage if he is capable of manœuvring. He has far greater opportunities of finding weak points in the defence. By penetrating these he can surprise the enemy defence posts in flank, and often destroy them before other troops of the defence are aware of his movements.

2. The attack on the edge of a wood differs in no way from the attack on any other position.

3. When advancing through a wood each forward section or unit should send a pair of scouts on ahead to reconnoitre and make good the ground by successive bounds. The whole breadth of the wood must be covered by observation.

The forward platoons should follow in as compact a formation as is consistent with prevention of surprise from the flanks. The supporting platoons, of the forward company or companies and the rear companies should normally move in platoon columns.

4. As there is great danger of losing direction, compass bearings should be taken frequently during the advance.

5. Rides and clearings must be very carefully examined. Movement along rides running parallel to the line of advance should be avoided by forward units, who should move through the wood just clear of the rides. If there is any probability that the enemy can command transverse and diagonal rides with enfilade fire, the infantry should line up on the near edge and cross at a single rush.

6. If the wood is dense the forward units must follow close behind their scouts to prevent the latter being surprised in detail, and destroyed.

7. Frontages and depth should be reduced, in order to ensure that the whole frontage is covered. This does not violate the essential principle of having ample space for manoeuvre, since the defender's narrow field of fire and view will enable the attackers to move unseen, although in close proximity, and so counter-balance this limitation.

8. Machine guns and mortars may be employed with the forward units to replace artillery support.

9. Touch must be kept with the troops advancing in the open outside the wood. This should be done by the flank units, or special patrols.

10. A larger proportion of troops should be detailed for supports than normally, in order to exploit successful pene-

tration and to guard against surprise counter-attacks. A small reserve should always be kept.

11. Detachments of engineers should, when possible, accompany the infantry, in order to assist in the demolition of obstacles.

12. When debouching from the far edge of a wood, there is a great danger of the enemy's artillery fire being concentrated on the edge. In the event of the infantry being unable, owing to fire from positions outside the wood, to follow on the heels of the retreating enemy, it should reorganize first within the wood. Hence the further attack from the wood may resemble the attack in position warfare and need the maximum possible assistance from the other arms. In all other circumstances the leading infantry should advance as quickly and as far as possible from the wood in order to escape the enemy artillery fire.

13. When an advanced guard has moved through a wood unopposed a halt should be made before quitting the far edge. Advantage should be taken of this halt to reorganize the infantry, reconnoitre, and take bearings of the ground ahead. This must be done without disclosing its presence to hostile observers.

14. When endeavouring to capture a small wood or copse the attack should be made from a flank if possible. The wood should be kept under heavy fire from the other arms whilst the infantry move round one of the flanks of the wood and, turning inwards, deliver an enveloping attack.

Machine guns or Lewis guns should be pushed forward to positions on the flanks from which they can command the exits from the wood. Thus they will be able to stop the enemy reinforcing the wood and also cut off the retreat of the defenders.

15. Smoke may be usefully employed to blind such copses and thickets. It may also be used with advantage to blind defence posts or machine gun positions in a large wood.

16. Gas may be employed with advantage in the attack on woods. It may sometimes be advisable to fill a wood with persistent gas and work round its flanks, but persistent gas must not be used without approval having been obtained from higher authority.

Opportunities will often occur for the employment of non-persistent gas shell. Such gas shell, bursting inside woods, houses and barns may effectively arrest hostile rifle and machine gun fire, and prove particularly helpful in overcoming local resistance, that cannot be precisely located.

74. The defence in woods.

1. If a wood fits into the general scheme of the defence, it should be held, as it affords a valuable obstacle to break up the enemy's attack, and excellent cover for the concentration of the defender's reserves.

It should be remembered, however, that it will often be necessary to avoid holding tactical positions in the wood from fear of enemy gassing. In such cases it may be possible to deny the wood to the enemy by filling it with gas; at the same time arrangements should be made to keep the exits from the wood under fire.

2. If a wood is situated just in front of the line of defence it should usually be held as a forward position, in order to deny it to the enemy. Otherwise it will afford the enemy a covered approach in which he can concentrate and deliver a surprise attack at close quarters.

3. If the wood is too far in front to be a serious threat to the defence, it should not be held, but steps must be taken to site the forward defence posts in such a way that, in conjunction with artillery, mortar and machine gun fire, the defenders can bring an effective fire to bear on the exits from the wood. It may often be advisable to send fighting patrols into the wood when an attack is imminent in order to harass the enemy's advance.

These patrols should be furnished from the reserve company, so that the strength of the forward positions will not be diminished. If time permits, entanglements and obstacles may be prepared, both inside the wood and on its near edge to hinder and disorganize the enemy's advance.

Such woods offer favourable targets for gas shelling and they should be subjected to this manner of attack if our own troops are not endangered thereby.

4. In holding a wood, the position of the defence posts should be far enough from the front edge of the wood to prevent the enemy's artillery ranging on the front edge from affecting the garrison. Wide clearings will have to be made in order to obtain a field of fire, and defence posts and machine gun positions must be sited to flank these clearings; subsequently the defence posts will be connected up into a continuous system. The entry of the enemy into the wood must be prevented by entangling the front edge and providing fire to flank it.

5. The positions for the supports and reserves should be selected so that the defenders may be able to sweep diagonal and transverse rides and clearings with enfilade fire.

Machine guns should be sited to sweep all rides, clearings and streams running through the wood.

6. The first essential task of consolidating a position in a wood is to provide an effective field of fire by clearing the foreground.

7. Breastworks with a parados are normally more suitable than trenches in a wood. In any case the space between parapet and parados must be very narrow to save casualties from overhead splinters of shells bursting against the branches of trees. Abattis should be constructed when time is available, in front of portions of the position where the defence is intended to be merely passive.

75. The attack on villages.

1. A village or town should be treated as a distinct objective for the unit or formation detailed to take it. This course is advisable, because of the inevitable slowness and exhausting character of fighting amongst houses and clearing cellars. This, however, in no way relieves the commander detailed to take it of the responsibility for following up the retreating enemy if the resistance is of short duration.

2. The delay entailed in capturing the village must not be allowed to retard the progress of the attack of the troops on either flank. If these troops succeed in advancing, a gap will be caused in the frontage of the attack beyond the village. If such a gap is of considerable extent it will be necessary to fill it by a fresh body of troops from either the supports or the reserves. These troops will pass by one or both flanks of the village to take over the frontage beyond the village and continue the advance.

3. The village should be neutralized by the heaviest possible howitzer bombardment, machine gun and mortar fire.

The decisive attack should be made from a flank, or both flanks, while the units attacking on each side of the village are pressing on.

4. As few infantry as possible should be employed frontally against the village.

5. As soon as any forward unit has been able to close with the enemy in any houses, and is engaged in clearing up the hostile resistance, the next supporting unit should pass on and continue the advance.

Thus the pressure on the enemy will be maintained, and no opportunity allowed him to rally.

6. The village or town should be divided into areas and separate units or formations detailed to capture and clear each of these areas. When a creeping barrage can be arranged, pauses must be made in it after it has swept an area. Thus the succeeding unit, or formation, will be allowed time to close up under the barrage and follow it when it lifts.

Each area will be consolidated directly it has been captured. Barricades should be erected at cross roads and all commanding buildings put into a state of defence.

7. The rifle sections of each platoon should capture and clear houses and cellars, covered by the fire of the Lewis gun sections. The latter will take up positions either in the street or in windows, from which they can cover the approaches to the house.

8. Sections should advance up the right hand side of a street, as the defenders, firing from their right shoulders, will have to expose themselves in order to fire down either side of the street.

9. Mortars are of great value for the close support of the infantry in street fighting.

10. It may sometimes be advisable not to make a direct attack on the village but to fill the village with gas. In such a case the attackers will work round the flanks.

76. *Moving through towns and villages when not in contact with the enemy's troops.*

When moving through towns with a hostile population, the method of movement by bounds should be used, if there is any possibility of being surprised or ambushed.

77. *The defence of villages.*

1. The same considerations as laid down in Sec. 74 for the defence in woods apply to the question of the inclusion of a village in the defence scheme. In addition, the facilities which it affords for water, cover and shelter increase the arguments for its inclusion. On the other hand, unless good cellar accommodation is available, villages are apt to become shell traps, while the local effect of a bursting shell is also increased.

2. A village or town should be allotted a separate unit or formation as its garrison.

3. The forward posts should be placed in front of the edge of the village. The actual edge would provide an easy target for artillery, whilst a forward position within the village would allow the enemy to gain valuable cover and a jumping off point for his attack.

4. If the village is small and the ground in front of it can be covered by fire, the forward posts may be sited in front of the flanks of the village. Thus the enemy may be shepherded into a dangerous funnel of fire.

5. Supporting troops should be disposed in central positions from which they can move in any direction to carry out their rôle.

6. The defence of the interior of small villages can best be entrusted to machine guns and Lewis guns. These should be sited to sweep all the roads and other channels of approach, such as streams, &c.

In view of the fact that the number of machine guns and Lewis guns will always be inadequate for the sole defence of the interior of large towns and villages, preparation must also be made for the best employment of the other infantry weapons.

Houses should be loopholed, windows sandbagged, and communications established from house to house. These measures will increase the power of manoeuvre of the defenders.

Cross-roads, village greens, and market squares should be specially strengthened by barricades or trenches on the rear side to secure advantage of the field of fire afforded.

7. Special report centres should be established at central points, known to all the defenders.

8. The danger of disorganization in street fighting is so great that all subordinate leaders must use every effort to retain control, and keep their men in hand.

9. Men will naturally take up window positions on the side of the street which exposes them least, i.e., they will occupy windows on the left side of the street (facing the enemy) if they fire from the right shoulder, but some troops must be placed on the other side of the street.

10. Churches, town halls, market places, or other prominent positions should be avoided as billets for large bodies of troops.

CHAPTER VIII.

NIGHT OPERATIONS.

78. *General considerations.*

1. Night operations may be classified under three headings :—

- i. Night marches.
- ii. Night advances.
- iii. Night assaults.

The usual object of night operations is to surprise the enemy, though in certain cases night marches may be undertaken to avoid the heat of the day. Night advances, also, may be used to cross ground which is dangerously exposed in daylight (*see* Sec. 39, 5 and 7). Night operations may also be undertaken to effect withdrawals.

2. A thorough reconnaissance should be carried out in daylight before any night operation.

This reconnaissance should be carried out, if possible, by all officers down to platoon commanders. All routes should be examined and marked as far as possible.

In all night operations magazines should be charged but rifles should not be loaded. No one must fire without a distinct order. A pass-word should be arranged and troops should wear some distinguishing mark.

When within possible view or hearing of the enemy absolute

silence must be preserved and no smoking, talking, striking of lights or flashing of electric torches should be permitted. Accoutrements must be securely fastened to prevent them rattling. Troops should always break step when moving. Men should be warned that if they cannot refrain from coughing or sneezing they must press a handkerchief or some similar article against their mouth or nose.

Definite instructions must always be issued as to the action to be taken in case the enemy is encountered.

3. For a night march local guides should be procured where possible; but this does not relieve commanders of the responsibility of carrying out reconnaissances previously or of checking the direction of the march by compass or other means.

As secrecy is of vital importance outposts should not be withdrawn until the main column has moved off: fires should be banked and left burning. Compass bearings must be given for direction. Side roads or turnings where troops in rear might go astray should be blocked by tree branches, whitened stones or ropes. The destination should be some easily recognizable landmark, or where this is not possible, a detailed description of the place should be given in orders.

4. The purpose of a night advance is to gain ground from which a further advance, or an assault, can be made in daylight, i.e., a dawn attack.

This form of attack is the best means of achieving surprise on a large scale. The actual attack may begin just before dawn so that the enemy's forward positions are stormed by surprise, while the later stages of the attack may be developed in good order by daylight.

For a night advance compass bearings must be given and used by each platoon. Guides should be provided if

possible. Any features which stand out against the horizon should be noted for reference. After passing any obstacle or defile the unit should proceed its own length beyond it, *and then halt until the rear of the column is closed up.* Units *should move in as concentrated a formation as possible.*

5. Night assaults, owing to the risks of confusion and the limitations of the attacker's movements entailed, do not now carry the same comparative advantage as was the case before the introduction of smoke. Hence they will be restricted to attacks on a very limited objective, as in the case of raids or attempts to capture special tactical localities.

6. It must be remembered, however, that, by employing smoke, the conditions of night can be produced artificially, while in an attack most of the advantages of daylight are retained by the attacking troops, at least temporarily. At the same time the use of smoke achieves only two elements of surprise. It conceals the direction and weight, but not the time, of the blow, as its appearance will necessarily warn the enemy to expect an attack.

7. In addition to surprise, the assault under cover of darkness has the advantage of the enemy's fire being unaimed, except for the restricted lines of fire afforded by night-firing rests, until the attackers are close enough to rush their objective. Moreover, the enemy cannot gauge the extent and depth of the attack and his artillery fire cannot be concentrated on the attacking troops. Again, the effective use of his supports or reserves is hindered by lack of definite knowledge as regards the attacker's strength and movement.

8. The main disadvantages of a night assault are the difficulty of maintaining direction and of finding objectives, the strain on the attacker's nerves and the resultant danger of confusion.

To avoid these risks special measures must be taken for the maintenance of direction. Before the beginning of the attack starting lines should be taped out at right angles to the direction of advance. Units should move in as concentrated a formation as possible. Deployment into section columns should not be carried out before a position is reached from which the objective can be rushed with the bayonet, unless the enemy open such a heavy fire as to necessitate an early deployment.

9. A creeping barrage is the best guide in a night assault, troops being kept as close up to the barrage as possible, and if thermite be used, definite points can be indicated on which to advance.

If successive objects are to be assaulted the barrage should pause for an interval in order to prevent the infantry from overrunning the objective in the dark.

10. The bayonet is the best weapon for a night attack. Rifle fire is seldom effective under such conditions: it also has the disadvantage of enabling the enemy to locate the attackers, while in addition it may cause accidental casualties in the attacker's own ranks.

11. If enemy scouts, patrols, or outposts are met during an advance or assault they must be instantly rushed with the bayonet.

CHAPTER IX.

AMMUNITION SUPPLY.

79. *Method of conveying ammunition from the base to the battlefield.*

1. The administrative services deliver ammunition at the "Divisional Ammunition Refilling Points" which are situated within easy reach of the S.A.A. sections of the divisional train but sufficiently far behind the fighting troops to ensure that the freedom and movement of the latter is not curtailed. (*See F.S.R., Vol. II., Sec. 183, 4.*)

2. The reserves of ammunition held by the fighting troops, other than tanks, are distributed in action among:—

- i. The regimental reserves.
- ii. The S.A.A. sections of the divisional train.

The amount of ammunition carried in each of the above is shown in War Establishments.

3. The S.A.A. sections of the divisional train, which connect the regimental reserve with the administrative services at the refilling points, usually march in accordance with orders received from divisional headquarters, and when an action is imminent move forward to connect up with the brigades which they serve.

4. In an emergency in action ammunition from these sections must be supplied to any troops on demand, but normally

the infantry brigade, which each section is to supply, is detailed, so that the S.A.A. section commander may know whom they have to supply and each infantry brigade know whence to expect replenishment.

These S.A.A. sections usually march immediately in rear of the fighting troops of their respective divisions, unless circumstances render this undesirable.

During an action they are established in positions favourable for communication and movement.

5. The commanders of S.A.A. sections of the divisional train on approaching the battlefield will :—

- i. Send forward an officer or N.C.O. to ascertain the position of the troops which he has to supply.
- ii. Detach a motor cyclist orderly to remain with the commander of the infantry brigade ammunition reserve (*see* Sec. 80), until there is no longer any probability of ammunition being required.
- iii. During the action send forward ammunition as demanded by the commander of the infantry brigade ammunition reserve. The transport conveying this ammunition will normally be unloaded and returned to the S.A.A. section as soon as possible.

6. The transport of the S.A.A. sections of the divisional train will normally be mechanical. Should the ground be unsuitable for the employment of mechanical transport, use will be made by the S.A.A. sections of a portion of the horse transport echelon of the divisional train, which consists of limbered G.S. wagons.

80. *The direct issue from and replenishment of the battalion S.A.A. wagons and pack animals.*

1. The ammunition available in an infantry battalion is carried partly on the man, on pack animals, and in the regimental wagons.

2. A brigade reserve, under a selected officer, will normally be formed by detaching from each battalion as much of its regimental reserve ammunition as the brigade commander may think fit. The brigade reserve forms a link between the regimental reserve and the S.A.A. section of the divisional train. It should be regarded as available for the brigade generally, but in the case of necessity it will supply ammunition to any troops engaged. This reserve marches in rear of the brigade and during an action moves as the brigade commander may direct. It should be accompanied by orderlies to maintain communication with the various regimental reserves.

If battalions are detached to any distance, they will usually take the whole of their regimental reserves with them, the brigade reserve being re-formed on their return.

3. The commander of the brigade ammunition reserve will :—

- i. Open up communication with the S.A.A. section of the divisional train, and also with the various regimental reserves.
- ii. Take the earliest opportunity to fill up empty transport from the S.A.A. section of the divisional train. The request for the amount of ammunition required will be sent, in writing, to the officer in charge of the S.A.A. section of the divisional train by the R.A.S.C. orderly furnished for that

purpose, who will also act as guide to the officer bringing the ammunition forward. This orderly will be used for no other purpose. Demands for ammunition will be made for the required number boxes.

- iii. Not send men and transport animals belonging to the brigade reserve to the S.A.A. section of the divisional train, nor men and transport animals belonging to the latter further to the front than the brigade reserve, except in case of emergency.
 - iv. Retain empty transport in the brigade reserve until reloaded or replaced.
 - v. Sign receipts prepared by the officer in charge of the S.A.A. section of the divisional train for the number of full ammunition boxes.
 - vi. After an action or during a pause in the engagement make good from the S.A.A. section of the divisional train all deficiencies of ammunition.
4. The ammunition transport remaining with each battalion after the brigade reserve has been formed marches in rear of the battalion, or as the brigade commander may direct.
5. Whenever a collision with the enemy is probable battalion commanders will, on their own initiative, increase the number of rounds carried by each man to 120 from their regimental reserves, taking the necessary steps to replenish their reserves as soon as possible from the brigade reserve. It will usually be advisable to issue these extra rounds from the portion of the regimental reserve not allotted to companies.
6. On the deployment the transport carrying the machine gun ammunition moves as directed by the commander of the

machine gun platoon. The portion of the regimental reserve not allotted to companies will be under the regimental serjeant-major; it will, at the outset, be retained in the hands of the battalion commander, and will move as directed by him. The exact distribution in action of the regimental reserve must principally depend on the nature of the ground. The object is to maintain the power of replenishing the supply from the brigade reserve, whilst getting the regimental reserve as far forward as possible so as to facilitate the supply of ammunition to the forward units. The regimental serjeant-major should be provided with signallers and orderlies when necessary, for the purpose of maintaining communication with the company pack animals and with the brigade reserve. As the regimental reserve becomes empty it will be refilled or exchanged, under the direction of the regimental serjeant-major, from the brigade reserve. During the final stages of the attack every opportunity of gaining ground must be seized, so that the regimental reserve may be at hand as soon as the position is carried.

7. The ammunition pack animal allotted to each company joins its company on the deployment of the battalion, or when the company is detached, and is then placed under the charge of a selected N.C.O. During an action the selected N.C.O. will direct the movements of the pack animal in accordance with the orders of the company commander and will keep as close to the company as possible. When men have once joined the forward units they cannot be withdrawn to replenish ammunition except under very favourable conditions of ground, and the ammunition of the forward units must therefore be replenished by supporting units. Commanders of supporting troops will therefore carefully watch the progress

of the pack animals, and, previous to losing touch with these reserves, will draw extra bandoliers of ammunition for their own unit and for the forward units in front. It will be the duty of the selected N.C.Os. concerned to superintend the issue of this ammunition, and, as soon as the supply is exhausted, to return to the regimental reserves for a further supply. When their own company is absorbed in the firing line they will place their pack animals in the most favourable position for the issue of ammunition to the successive advancing troops. If more convenient, commanders of supporting troops may draw extra ammunition direct from the regimental reserves instead of from the company pack animals.

8. The amount of extra ammunition so issued to supporting troops must be dependent on :—

- i. The expenditure at the front.
- ii. The cover afforded by the ground in their advance to the firing line.
- iii. The amount of ammunition which a man can carry without impairing his efficiency.

Open ground, in the face of a heavy fire, must be crossed by short rushes at top speed. For such an advance activity is the first consideration, and men should not be called upon to carry more than 300 rounds, except when the ground can be crossed in a single rush.

By Command of the Army Council,



THE WAR OFFICE,

November, 1921.

APPENDIX.

THE EMPLOYMENT OF LIGHT MORTARS.

Organization, composition and armament of a light mortar section.

1. A light mortar section is an integral part of a battalion.

2. The personnel of a light mortar section consists of 1 subaltern, 1 corporal, 1 lance corporal, 16 privates, 1 batman, and 1 driver. 1st line transport—2 draft horses, 1 limbered G.S. wagon for two mortars and ammunition.

3. Each light mortar section is armed with two light mortars which fire bombs.

4. The essential parts of each mortar comprises the following:—

	Weight.
(a) Barrel and base cap	about 49 lbs.
(b) Base plate	„ 29 „
(c) Sling and handles	„ 4 „
(d) Mounting	„ 35 „
(e) Clinometer	} in haversack „ 5 „
Spanner	
Spare striker	
Tommy bar	

Each bomb weighs about 11 lbs.

General characteristics.

5. As stated in Sec. 10, 13 the value of light mortars lies in their power to search ground which cannot be dealt with

effectively by low trajectory weapons, i.e., rifle, Lewis gun or machine gun, in their comparative mobility, in the rapidity and accuracy of their fire, and in the facility with which they can be concealed.

6. *Mobility*.—The mortar can be taken over any ground over which infantry can advance.

Owing to the weight of its component parts (*see* para. 4 above) the mortar cannot be expected to keep up with the infantry during a rapid advance if the mortar and its ammunition are carried by hand.

In order to gain full advantage of the mortar, a bold use must be made of its transport.

The mortar can come into action in half a minute when the sling and handles are used and base plate only partially dug in.

The mortar can be moved very quickly from one position to another, provided the distance is not great, and can fire without delay if ammunition is available.

7. *Ammunition supply*.—This is the controlling factor as regards the successful employment of light mortars. Special instructions will be issued on each occasion the mortar is used, to ensure that it has an adequate supply.

8. Under favourable conditions 30 to 40 rounds a minute can be fired from the mortar. This rapid rate cannot be kept up for more than two or three minutes owing to the heating of the mortar, even if the ammunition supply allows of it.

Rapid fire should only be ordered on special occasions, e.g., against personnel to repel a counter-attack or as covering fire prior to an assault.

9. Its high angle of fire enables the mortar to be fired from close up against steep cover, such as sunken roads, railway embankments, quarries, and owing to the steep angle of descent of the bomb it can engage hostile troops behind similar cover.

10. Owing to the low muzzle velocity and vulnerability, the slow flight of the bomb enables it to be seen by the enemy as it approaches, who can then pick up the line of fire and possibly the actual position of the mortar.

Mortars should, therefore, usually fire when artillery are firing, or in conjunction with other mortars. Cross fire is specially useful in this connection, i.e., the fire of two mortars firing obliquely at the same time, and in such direction that their lines of fire cross.

11. The table below gives the effective beaten zone (50 per cent. and 100 per cent. length zones) of a mortar firing with different charges at an elevation of 45°.

Charge.	50 per cent.	100 per cent.
	length zone. Yards.	length zone. Yards.
Blue Cartridge	8	32
Blue Cartridge and one ring	16	64
Blue Cartridge and two rings	20	80
Blue Cartridge and three rings	30	120
Blue Cartridge and four rings	30	120

12. The normal range of a light mortar at an elevation of 45° is shown in the table below :—

Charge.	Elevation. Degrees.	Normal range. Yards.
Blue Cartridge	45	240 ×
Blue Cartridge and one ring	45	400 ×
Blue Cartridge and two rings	45	510 ×
Blue Cartridge and three rings	45	620 ×
Blue Cartridge and four rings	45	710 ×

Examples : Blue Cartridge, elevation 45° ; normal weather, range lies between $240-16$ and $240+16$, i.e., 224 and 256 yards.

Blue Cartridge and two rings, elevation 45° ; normal weather, range lies between $510-40$ and $510+40$, i.e., 470 and 550 yards.

13. The bomb having a low muzzle velocity and being comparatively light, is not suitable for destroying well-constructed defences, but owing to the noise of the detonation and the rapid rate of fire which can be obtained, the moral effect is very great against troops holding such defences.

The material effect against personnel in the open is very great.

14. The light mortar section has no means of communication other than by runner.

If the light mortar section is detailed to co-operate with one company, difficulty may be experienced by a C.O. in moving it across the battle front to assist another company in sufficient time.

Observation of fire will usually have to be made from the close proximity of the mortar position, otherwise time will be wasted in getting the information back as to the fall of rounds.

General principles for the employment of light mortars in battle.

15. The section being an integral part of the battalion it will normally be employed with its own battalion.

In certain exceptional cases all the light mortars of a brigade might be employed in the area of the foremost battalion or battalions, *e.g.*, to bombard the enemy position prior to an attack; as soon as such a task has been completed the sections would revert to the command of their own C.O.s.

16. Owing to the comparatively short range of the mortar, to be of real assistance to the unit with which it is co-operating the mortar should be not more than about 300 yards from the leading troops.

The advantages of such a position are:—

- i. That the O.C. mortar section can be in personal touch with the unit commander who requires mortar assistance.
- ii. The target can be pointed out quickly on the ground and fire opened in a shorter time than in the case of the artillery.
- iii. The observation of fire will be facilitated.
- iv. The mortar can be used as a weapon of opportunity.

To enable the section to maintain this position with the advanced troops the boldest use must be made of the sec-

tion and its transport. The average rate of advance of a section when man-handling the mortar and its ammunition is about two miles an hour.

Light mortars with advanced and rear guards.

17. The position of light mortar section with advanced guards should normally be immediately behind the foremost formed body of infantry. Being well forward the section may be able to dislodge the enemy rapidly, thus saving time and the necessity for extensive turning movements.

18. In rear guard action, owing to their comparatively short range, light mortars can do little in making the enemy deploy at a distance. They are of value if sited to fire into ground which is dead to the fire of artillery and rifles, and under cover of which the enemy might assemble prior to an assault. The fire of mortars in such a case should be withheld so as to come as a surprise to and to inflict as many casualties upon the enemy as possible. Mortars will not, as a rule, however, be used in rear guard action owing to their short range and the difficulty of withdrawing them quickly.

Light mortars in the attack.

19. Prior to an attack on an organised position light mortars can be used for wire cutting in conjunction with the artillery, and they are of special value in cutting wire which the light artillery may not be able to reach owing to their flat trajectory and to the slope of the ground.

Light mortars may be used in the intensive bombardments prior to the initial assault in conjunction with the light artillery.

20. During an attack of any nature the rôle of light mortars will be to assist the infantry with their fire to capture any isolated localities in which the enemy are holding out.

Battalion commanders will decide prior to the attack whether they will allot the light mortar section to one of the forward companies or whether the section will be retained under their own control.

The light mortar section would normally be allotted to work with one of the forward companies in order that the section may be as far forward as possible.

In deciding the question as to the location of the light mortar section, the battalion commander should take the following points into consideration :—

- i. The methods adopted by the enemy in defence.
- ii. The nature of the ground in connection with the facilities for the advance of the light mortar section and its transport.
- iii. Probable location of suitable light mortar targets.
- iv. The difficulties of transferring the light mortar section from one part of the battalion front to another.

In order to enable the infantry to approach within assaulting distance of a hostile position without incurring danger from the explosion of the bomb, and in order to keep the enemy under cover, it may be advisable to use a few blind rounds at the end of the light mortar bombardment.

Light mortars in defence.

21. Light mortars should be sited so as to cover any dead ground which cannot be effectively swept by rifle, Lewis gun or machine gun fire, under cover of which the enemy could assemble prior to an assault.

22. In sighting light mortars, consideration should be paid to the following points :—

- i. Permanent positions should be first selected and constructed with alternative positions in the vicinity.

Permanent positions should be made as strong as time, labour and materials will allow, and should be carefully camouflaged. Each emplacement should have an ammunition store capable, in the case of position warfare, of holding 200 rounds a mortar and a dug-out for the section and means of communication with the observation post. These emplacements will only be used for firing from in the case of an attack. The emplacements should usually be placed in pairs with an interval of not more than 50 yards. This facilitates control and ammunition supply.

- ii. As the defence becomes more stabilised temporary positions should be used for special tasks, such as harassing fire, retaliation, and to support raids. A number of these should be constructed so that the mortars can take up whichever position is most suitable.

When the mortars have carried out their tasks, they will return to their permanent positions. Owing to the vulnerability of the mortars, it is essential that they should change their fire positions frequently in order to avoid being located by the enemy.

Temporary positions should consist of base plate recesses, kept in good repair and provided with small ammunition recesses.

Light mortars against moving targets.

23. The fire of light mortars may be employed against low flying aeroplanes, as is described in the light mortar handbook.

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